REPORT NUMBER: SINCAP-CAL-12-004

NEW CAR ASSESSMENT PROGRAM (NCAP)
MOVING DEFORMABLE BARRIER SIDE IMPACT TEST

Chrysler Group LLC
2013 Dodge Dart
Four Door Sedan

NHTSA No: MD0305

PREPARED BY:
CALSPAN CORPORATION
P.O. BOX 400
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October 25, 2012

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NVS-111
1200 NEW JERSEY AVE SE, ROOM W43-410
WASHINGTON, D.C. 20590

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Administration, in response to Contract Number DTNH22-09-D-00126.

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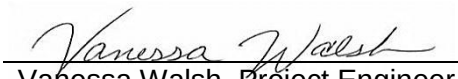
Prepared by:  Date: 10/5/2012

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Approved by: Date: 10/5/2012

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FINAL REPORT ACCEPTANCE BY OCWS:

_____

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

_____

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
SINCAP-CAL-13-004		

4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing of a 2013 Dodge Dart Four Door Sedan NHTSA No.: MD0305	**5. Report Date** October 25, 2012 **6. Performing Organization Code** CAL
Vanessa Walsh, Project Engineer David J. Travale , Technical Director	**8. Performing Organization Report No.** CAL-DOT-2013-004
9. Performing Organization Name and Address Calspan Corporation Transportation Test Operations P.O. Box 400 Buffalo, New York 14225	**10. Work Unit No.** **11. Contract or Grant No.** DTNH22-09-D-00126
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590	**13. Type of Report and Period Covered:** Final Test Report September 27, 2012 - October 25, 2012 **14. Sponsoring Agency Code** NVS-111

15. *Supplementary Notes*

16. Abstract

A 55/28, (61.90 kph / 38.5 mph), 90^0 Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2013 Dodge Dart Four door sedan in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on September 27, 2012.

The impact velocity of the Moving Deformable Barrier (MDB) was 62.47 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 18°C. The target vehicle's maximum post-test static crush was 179 mm located at level 3. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	IARV	Result
Head Injury Criteria (HIC_{36})	N/A	1000	92.35
Maximum Thoracic Rib Deflection	mm	44	20.12
Total Abdominal Force	N	2500	706.37
Pubic Symphysis Force	N	6000	-1515.60

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC_{36})	N/A	1000	380.90
Lower Spine Resultant Acceleration	G	82	44.92
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2634.05
Maximum Thoracic Rib Deflection	mm	38*	22.13
Maximum Abdominal Rib Deflection	mm	45*	17.37

* *Proposed IARV*

The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

17. Key Words	18. Distribution Statement
New Car Assessment Program (NCAP) Side Impact MDB ES-2re SID-IIs	Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave. SE Washington, D.C. 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833

19. Security Class. (of this report)	20. Security Class. (of this page)	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED	271	

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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the FY 2013 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00126. The purpose of this test is to generate comparative side impact performance in a 2013 Dodge Dart four door sedan.

The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated May 2012.

SECTION 2

SUMMARY OF TEST RESULTS

A 2013 Dodge Dart four door sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.47 km/h (mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by the Calspan Corporation's Transportation Test Operations Center in Buffalo, New York on September 27, 2012. Pretest and post- test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated May 2012. The side impact event was documented by 9 high-speed and 2 real-time cameras. Camera locations are included in this report.

The Dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)
Primary and redundant head CG tri-axial accelerometers
Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers
Abdomen forward, middle, and rear y-axis load cells
Lower spine (T12) tri-axial accelerometers
Public symphysis y-axis load cell

PASSENGER ATD (SID-IIs)
Primary and redundant head CG tri-axial accelerometers
Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers
Abdomen upper rib and lower rib y-axis displacement potentiometers
Lower spine (T12) tri-axial accelerometers
Acetabulum and iliac wing y-axis load cells

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in APPENDIX C of this report.

DUMMY INJURY VALUES

Measurement Description	Driver ATD (ES-2re)		
	Units	Threshold	Result
Head Injury Criteria (HIC36)		1000	92.35
Maximum Thorax Rib Deflection	mm	44	20.12
Combined Abdominal Force	N	2500	706.37
Pubic Symphysis Force	N	6000	-1515.60

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC36)		1000	380.90
Lower Spine (T12) Resultant Acceleration	G	82	44.92
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2634.05
Maximum Thoracic Rib Deflection	mm	38*	22.13
Maximum Abdominal Rib Deflection	mm	45*	17.37

*Proposed IARV

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Airbag 1 - Curtain	Yes	Yes	Yes	Yes
Side Airbag 2 - Torso/Pelvis Airbag	Yes	Yes	No	No
Side Airbag 3 - Pelvis	No	No	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	No	No
Other				

GENERAL COMMENTS:

1. P1 serial number - F034
2. P4 serial number - 8012

Data Anomalies:

- None

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

This section contains information reporting for the following Data Sheets:

Data Sheet No. 1 - General Test and Vehicle Parameter Data

Data Sheet No. 2 – Seat, Seat Belt, Steering Wheel Adjustment and Fuel System Data

Data Sheet No. 3 – Dummy Longitudinal Clearance Dimensions

Data Sheet No. 4 – Dummy Lateral Clearance Dimensions

Data Sheet No. 5 – Camera and Instrumentation Data

Data Sheet No. 6 – Test Vehicle Accelerometer Locations

Data Sheet No. 7 – MDB Accelerometer Locations

Data Sheet No. 8 – Post-Test Observations

Data Sheet No. 9 – MDB Summary of Results

Data Sheet No. 10 – Test Vehicle Profile Measurements

Data Sheet No. 11 – Test Vehicle Exterior Crush Measurements

Data Sheet No. 12 – MDB Exterior Static Crush Measurements

Data Sheet No. 13 – FMVSS No. 301 Static Rollover Results

Data Sheet No. 14 – Dummy/Vehicle Temperature and Humidity Stabilization Data

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MD0305
Model Year	2013
Make	Dodge
Model	Dart
Body Style	Four Door Sedan
VIN	1C3CDFBA7DD708016
Body Color	Charcoal gray
Odometer Reading (km/mi)	39 / 24
Engine Displacement (L)	2.0
Type/No. Cylinders	I4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6-Speed
Overdrive	Yes
Final Drive	Front Wheel Drive
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	No
Other Optional Feature	--
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	Yes
Driver Seat Belt Pretensioners	Yes
Rear Pass. Seat Belt Pretensioners	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	--

Does owner's manual provide instructions to turn off automatic door locks? No

DATA FROM CERTIFICATION LABEL

Manufactured By	Chrysler Group LLC
Date of Manufacture	July 12
Vehicle Type	Four Door Sedan

GVWR (kg)	1,944
GAWR Front (kg)	1,076
GAWR Rear (kg)	870

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				374.0	(A)
DSC X 68.04 kg				340.2	(B)
Cargo Weight (RCLW) (kg)				33.8	(A-B)

VEHICLE SEAT TYPE

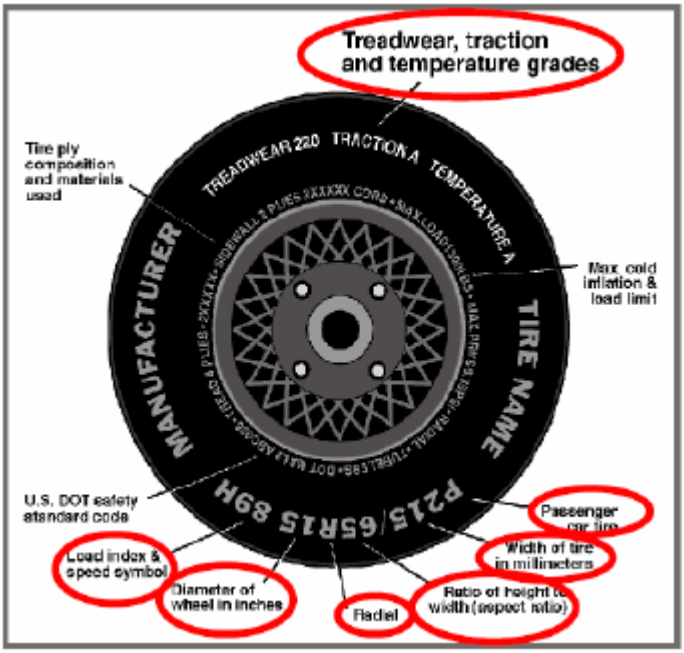
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable W/ Lever	Adjustable W/ Knob
Front Seat	X					X	
Rear or Second Row Seat		X			X		
Third Row seat							

DATA SHEET NO. 1 … (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012

VEHICLE TIRE INFORMATION

Collected for year, make, model, & VIN, all items circled in red, tire manufacturer and tire name.



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	235	235
Recommended Tire Size	P225/45R17	P225/45R17

TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Tire Size on Vehicle	P225/45R17	P225/45R17
Tire Manufacturer	Continental	Continental
Tire Name	ContiproContact	ContiproContact
Tire Type	All season	All season
Tire Width	225	225
Aspect Ratio	45	45
Radial	Yes	Yes
Wheel Diameter	17	17
Load Index/Speed Symbol	91H	91H
Treadwear	500	500
Traction Grade	AA	AA
Temperature Grade	A	A
Tire Material	Rubber	Rubber

DATA SHEET NO. 1 … (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	232	226	237	233
Tire Placard	kPa	234	234	234	234
Owner's Manual	kPa	234	234	234	234
As Tested	kPa	234	234	234	234

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 ± 21	207	207	207	207

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	481.5	278.5		522.0	351.0		514.0	364.0	
Right	kg	442.0	295.0		449.0	340.0		462.5	329.0	
Ratio	%	62	38		58	42		58	42	
Totals	kg	923.5	573.5	1,497.0	971.0	691.0	1,662.0	976.5	693.0	1,669.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1,497.0	(A)
Sum of Actual Weight of 2 P572 ATDS Used	kg	136.8	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	33.8	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	1,667.6	(A+B+C)

Does the measured As Test Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to – 9 kg)? [X] **Yes** [ ] **No**

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Rear Tail Lights	8.0
Engine Cover	2.0
Muffler after rear	4.0
Ballast / Equipment Added	0.0

DATA SHEET NO. 1 … (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

TEST VEHICLE ATTITUDES AND CG

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement**
LF	mm	681	686	Yes
RF	mm	686	686	Yes
RR	mm	688	684	Yes
LR	mm	686	682	Yes
Vehicle CG (Aft of Front Axle)	mm	1,123	1,125	
Vehicle CG (Left(+)/Right(-) from Longitudinal Centerline)	mm	-42	-41	

**** The "As Tested" vehicle attitude measurements must be equal to or within ± 10mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. Indicate "Yes" or "No" for "Meets Requirements".*

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, mid-angle position. The struck-side rear passenger's seat, rear center seat, and non-struck side rear passengers' seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	17.1	13.1	15.1
Front Passenger Seat	18.5	14.3	16.4
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat*	Fixed	Fixed	Fixed

**if applicable*

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward-Most
Driver Seat	15.1	22	Max	45	45	45
			Mid	21	21	21
			Min	0	0	0
Front Passenger Seat	16.4	23	Max	44	44	44
			Mid	23	23	23
			Min	0	0	0
Front Center Seat*	N/A	N/A	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Struck Side Rear Seat	Fixed	Fixed	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Non-Struck Side Rear Seat	Fixed	Fixed	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Rear Center Seat*	Fixed	Fixed	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-

**if applicable*

DATA SHEET NO. 2 … (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

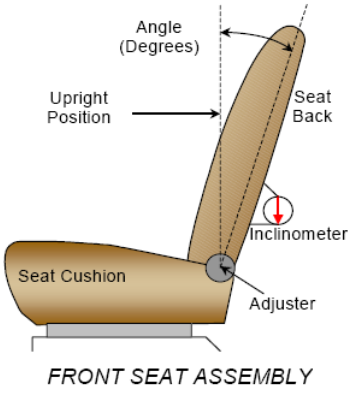
SEAT FORE / AFT POSITION

Seat	Total Fore / Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	220	22	110	11
Front Passenger Seat	222	22	110	11
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat*	Fixed	Fixed	Fixed	Fixed

**if applicable*

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck side rear seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck-side rear seat back.



FRONT SEAT ASSEMBLY

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detents*
Driver Seat w/ Seated Dummy	-14.9 to 50.6	-	-0.6	-
Front Passenger Seat	-14.6 to 46.2	-	-0.5	-
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat w/ Seated Dummy	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat*	Fixed	Fixed	Fixed	Fixed

**if applicable*

DATA SHEET NO. 2 … (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. For this test zero is defined as the uppermost position.

	Total # of Positions	Placed in Position #
Driver Seat	4	0 (0 is uppermost)
Rear Seat	Fixed	Fixed

HEAD RESTRAINT ADJUSTMENT

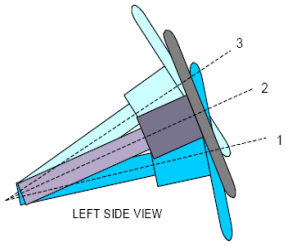
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	5	4 – Uppermost
Rear Seat	3	0 - Lowermost

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.

	Degrees	Fore/Aft Position (mm)
Lowermost – Position 1	22.3	0
Geometric Center – Position 2	24.4	20
Uppermost – Position 3	26.5	40
Telescoping Steering Wheel Travel		40
Test Position	24.4	20

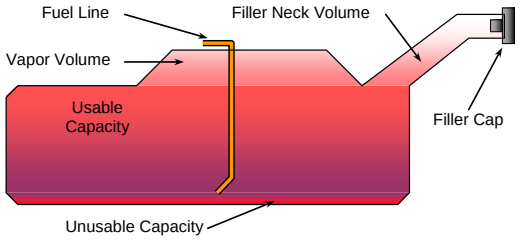


STEERING COLUMN ASSEMBLY

FUEL PUMP

Describe the fuel pump type, details about how it operates, and the location of the fuel filler neck.

The vehicle is equipped with an electric fuel pump. The fuel filler neck is on the right side of the vehicle. The pump creates positive pressure in the fuel lines, pushing the gasoline to the engine. See form 1 for more information.



VEHICLE FUEL TANK ASSEMBLY

DATA SHEET NO. 2 … (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

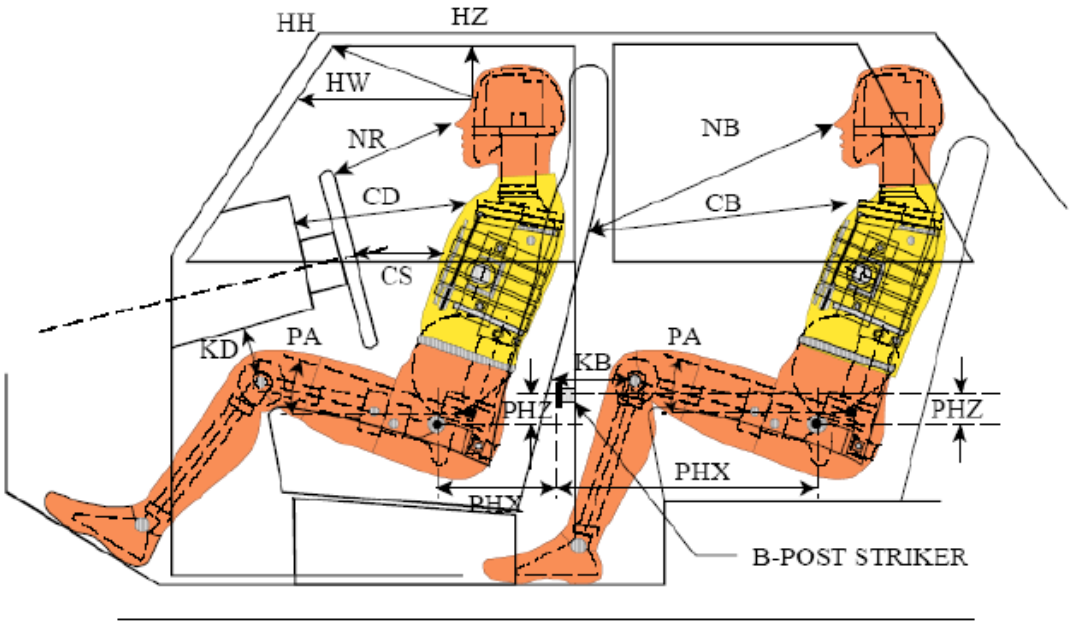
FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	59.8
Usable Capacity of "Optional Tank" (see Form No. 1)	50.0
Usable Capacity of Standard Tank (see Owner's Manual)	59.8
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	55.6
Actual Amount of Solvent Used in Test	55.6
1/3 of Usable Capacity	19.9

Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in Form No. 1? [X] **Yes** [ ] **No**

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012



NOTE: 2-DOOR VEHICLE SHOWN. REAR DUMMY PHX & PHZ MEASUREMENTS FOR A 4-DOOR VEHICLE WOULD USE THE C-POST STRIKER AS A REFERENCE POINT

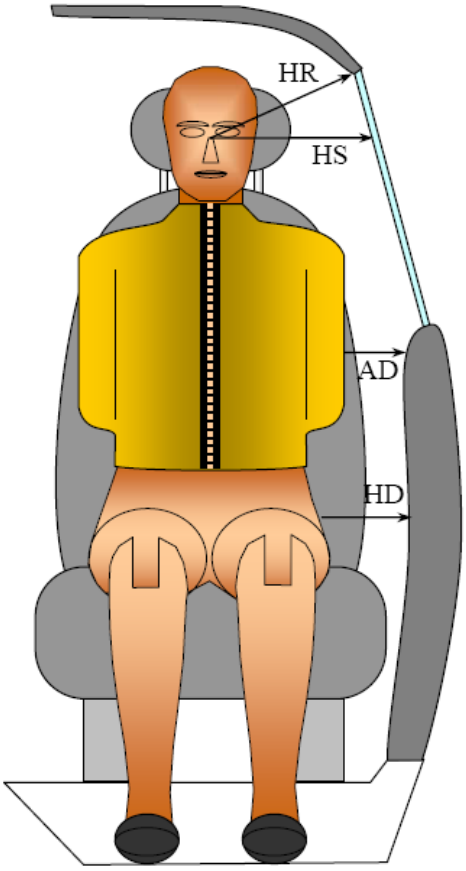
LEFT SIDE VIEW

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver (Serial No. F034)		Passenger (Serial No. 8012)	
			Length (mm)	Angle	Length (mm)	Angle
HH		Header to Header	313			
HW		Header to Windshield	545			
HZ	HZ	Head to Roof Liner	118		253	
NR	NB	Nose to Rim/Seat Back	428		546	
CD	CB	Chest to Dash/Seat Back	585		535	
CS		Chest to Steering Wheel	378			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	160	41.6	253	27.1
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	153	36.3	253	27.0
PAX°	PAX°	Pelvic Tilt Angle X		-21.4		21.5
	PAY°	Pelvic Tilt Angle Y				0.7
PHX	PHX	Hip Point to Striker (X-Axis)	180		210	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	144		221	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012



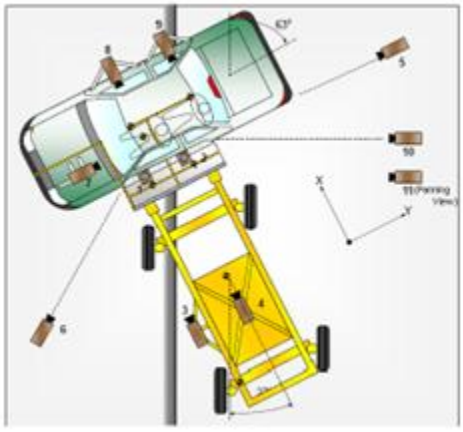
FRONT VIEW OF DUMMY

DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver (Serial No. F034)	Passenger (Serial No. 8012)
HR	Head to Side Header	mm	168	235
HS	Head to Side Window	mm	314	386
AD	Arm to Door	mm	110	148
HD	Hip Point to Door	mm	159	142

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	438	916	5183	14.5	1000
2	Overhead Close-up	242	916	5183	24	1000
3	Left Impact Point (MDB)	-1470	0	-847	12.5	1000
4	Side Overall (MDB)	-1140	0	-847	6.5	1000
5	Rear	425	10831	942	50	1000
6	Left Front	2637	749	937	28	1000
7	Driver Front (OB)				12.5	1000
8	Driver Side (OB)				6.5	1000
9	Passenger Side (OB)				6.5	1000
10	Real-time Left Rear				Zoom	30
11	Real-time In run				Zoom	30

Notes: *Reference: Impact Point projected to Ground*
+X = To Front of MDB, +Y = To Right of MDB, +Z = Down
**All measurements accurate to ± 6 mm.*

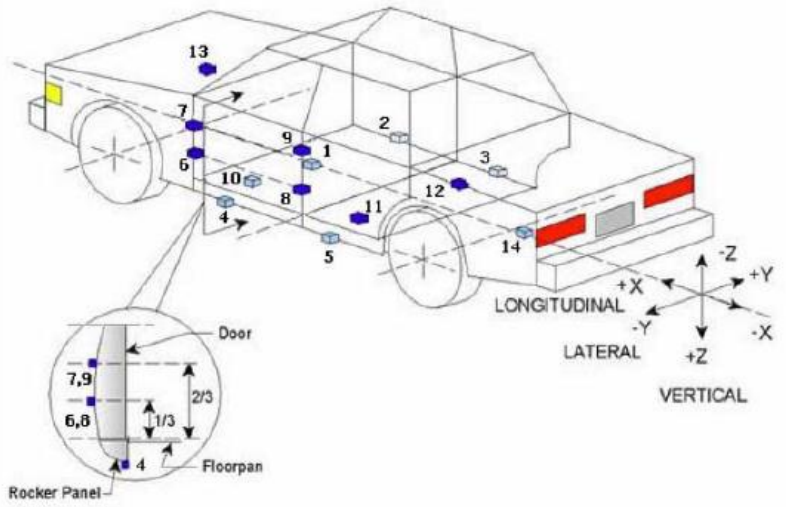
If applicable, explain why camera(s) did not operate as intended: All cameras operated normally

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MDB Accelerometers	7
Total	62

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012



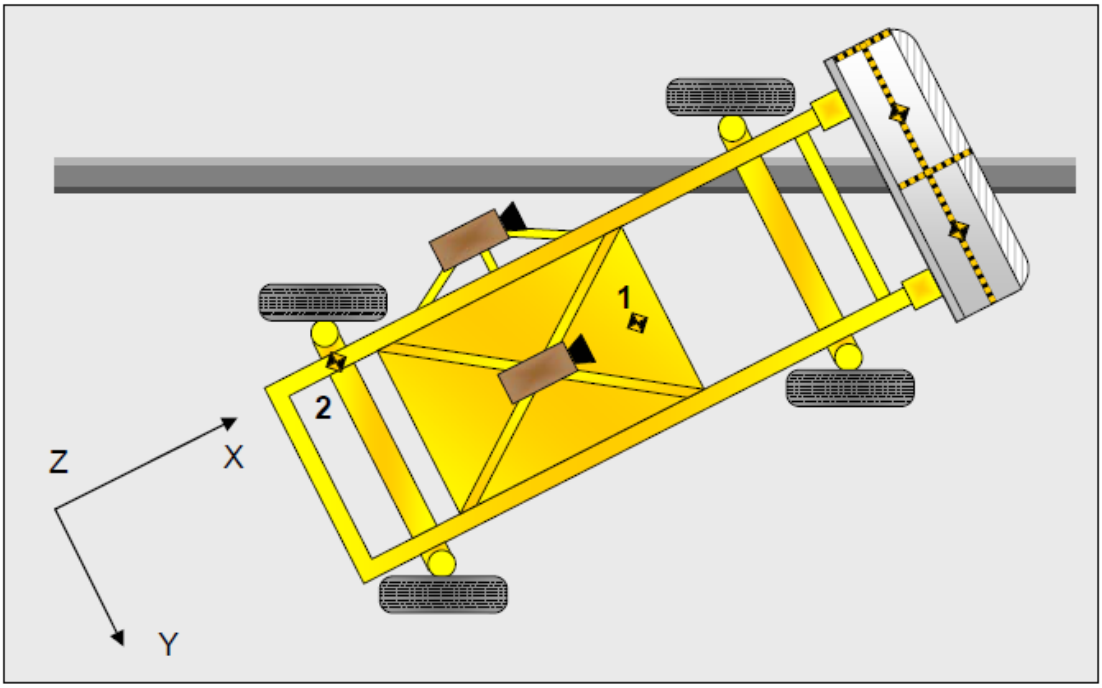
TEST VEHICLE ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2,510	23	-445
2	Right Sill at Front Seat	2,777	656	-310
3	Right Sill at Rear Seat	1,976	639	-289
4	Left Sill at Front Door	2,811	-655	-309
5	Left Sill at Rear Door	1,975	-643	-286
6	A-Post Lower	3,171	-650	-408
7	A-Post Middle	3,114	-675	-1,015
8	B-Post Lower	2,147	-679	-392
9	B-Post Middle	2,107	-675	-908
10	Front Seat Track	2,278	-554	-286
11	Rear Seat Structure	1,036	-536	-573
12	Rt. Rear Occ. Compartment	2,085	411	-238
13	Engine Block	3,789	22	-801
14	Rear Above Axle	1,151	1	-532

Reference: X – Rear surface of vehicle (+ forward)
Y – Vehicle centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 7
MDB ACCELEROMETER LOCATIONS

Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012



MDB ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	MDB CG	1859	0	-330
2	MDB Rear	386	-660	-660

Reference: X – Face of MDB (+ forward)
Y – MDB centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain AirBag & Head Liner	Curtain AirBag and Head Liner
Top of Head	Head Liner	Curtain AirBag and Head Liner
Left Side of Head	Curtain Airbag and Head Liner	Curtain AirBag
Back of Head	HeadRest	HeadRest
Left Shoulder	Torso/Pelvis Airbag	Side Door
Upper Torso	Torso/Pelvis Airbag	Side Door
Lower Torso	Torso/Pelvis Airbag	Pelvis Airbag
Left Hip	Torso/Pelvis Airbag	Pelvis Airbag
Left Knee	No Contact	Side Door

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	NA
Total Separation from Vehicle at Hinges or Latches	0	0	0	0	NA
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	NA
Disengaged from Latched Position	No	No	No	No	NA
Latch Separated from Striker	No	No	No	No	NA
Jammed Shut	Yes	Yes	No	No	NA
If Door Opened at Striker, Width of Opening at Striker (mm)	NA	NA	NA	NA	NA

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Deformed but remained in good condition
Sill Separation	None
Windshield Damage	None
Side Window Damage	Driver's window shattered during impact event
Other Notable Effects	None

DATA SHEET NO. 8 … (CONTINUED)
POST-TEST OBSERVATIONS

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Airbag 1 - Curtain	Yes	Yes	Yes	Yes
Side Airbag 2 - Torso/Pelvis Airbag	Yes	Yes	No	No
Side Airbag 3 - Pelvis	No	No	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	No	No
Other				

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2705
Vertical Impact Reference Line (Aft of Front Axle - Intended Impact Point)	mm		413
Actual Impact Point (Aft of Frontal Axle)	mm		417
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact Point	-4
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact Point	9

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1,250
Overall Length Including Honeycomb Frame	4,120
Wheelbase of Framework Carriage	2,600
CG Location of Front Axle	1,120

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	392.5	297.5	690.0
Right	kg	386.0	291.5	677.5
Ratio	%	57.4%	42.6%	100.0%
Totals	kg	778.5	589.0	1367.5

SPEED AND ANGLE AT IMPACT DATA

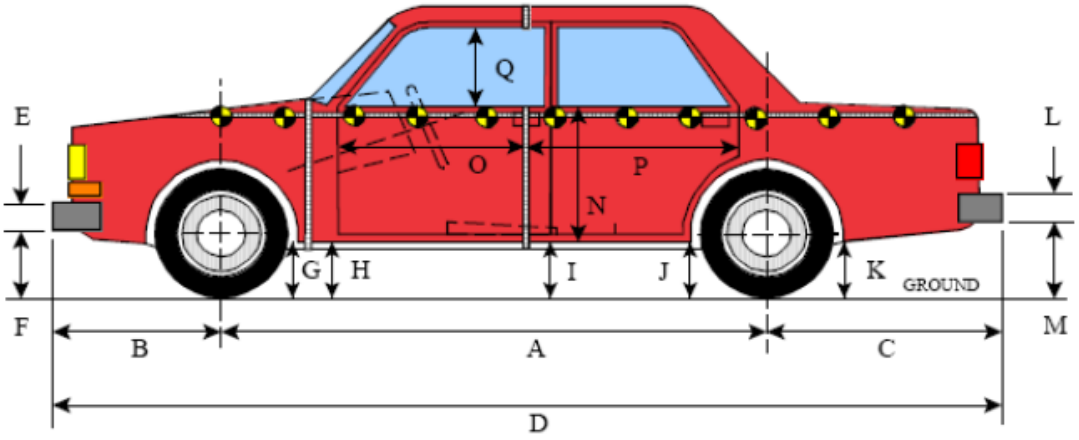
Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.5
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.4
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.5
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.0
MDB Crabbed angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.0

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Left	232
B	Top of Bumper	533	700	Left	169
C	Mid-Level	686	800	Left	167
D	Top of Stack	813	800	Left	179

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012



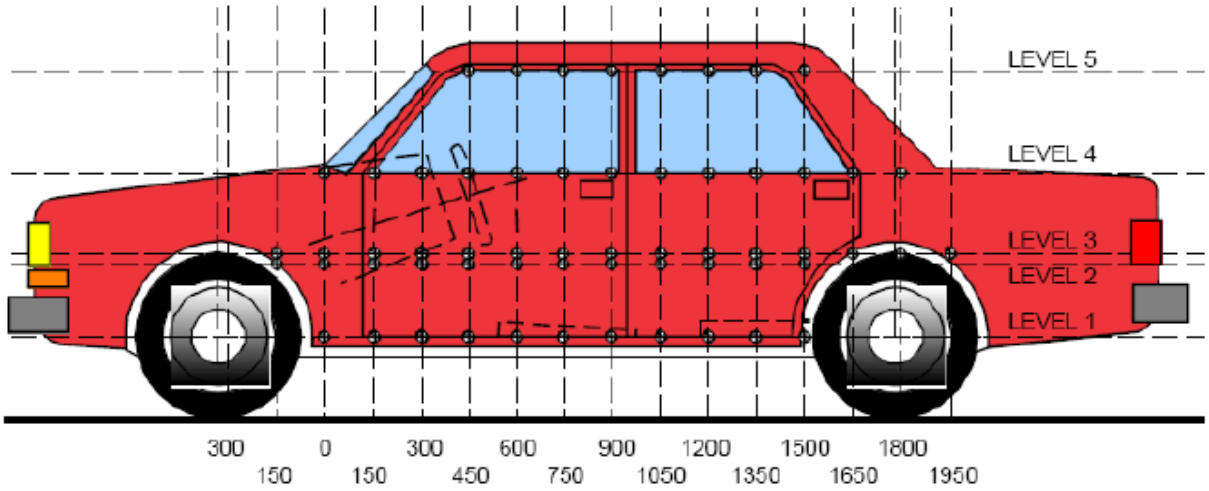
LEFT SIDE VIEW
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2,705	2,700	-5
B	Front Axle to FSOV	974	976	2
C	Rear Axle to RSOV	994	994	0
D	Total Length at Centerline	4,674	4,669	-5
E	Front Bumper Thickness	120	120	0
F	Front Bumper Bottom to Ground	429	435	6
G	Sill Height at Front Wheel Well	166	170	4
H	Sill Height at Front Door Leading Edge	174	176	2
I	Sill Height at B Pillar	188	203	15
J1	Sill Height at Rear Wheel Well	191	188	-3
J2	Pinch Weld Height at Rear Wheel Well	190	189	-1
K	Sill Height Aft of Rear Wheel Well	197	209	12
L	Rear Bumper Thickness	294	290	-4
M	Rear Bumper Bottom to Ground	348	361	13
N	Sill Height to Window Bottom of Front Window Sill	727	670	-57
O	Front Door Leading Edge to Impact CL	799	787	-12
P	Rear Door Trailing Edge to Impact CL	1,143	1,057	-86
Q	Front Window Opening	408	429	21
R	Right Side Length	4,542	4,539	-3
S	Left Side Length	4,541	4,532	-9
T	Maximum Vehicle Width	1,835	1,725	-110

DATA SHEET NO. 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Units	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	mm	357	82	1350
2	Driver Hip Point	mm	614	160	1500
3	Mid-Door	mm	695	179	1650
4	Window Sill	mm	952	117	1350
5	Window Top	mm	1462	4	1650

NOTE: *The above measurements should be taken along the vertical impact reference line. Vehicle measurements forward of the vertical impact reference line are negative.*

DATA SHEET NO. 11 … (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Dodge Dart four door sedan NHTSA No.: MD0305
Test Program: NCAP Side MDB Impact Test Test Date: 9/27/2012

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

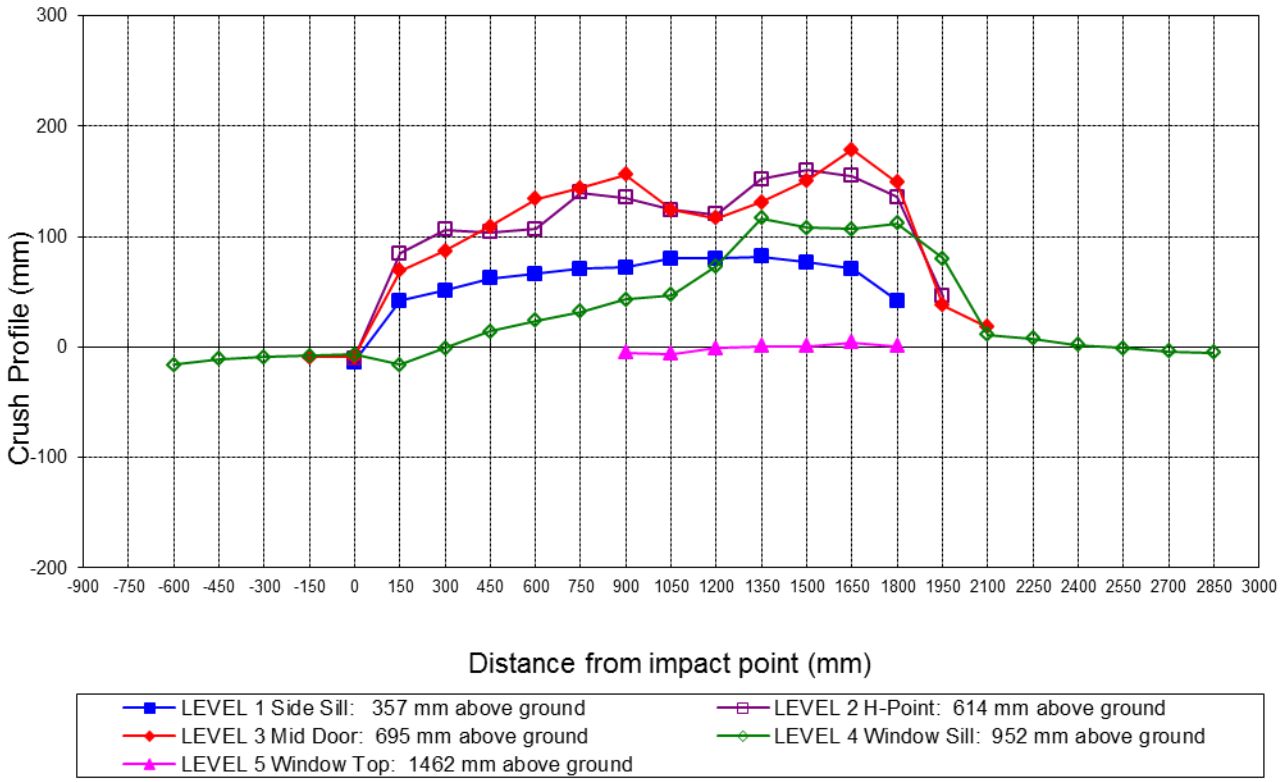
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600				739					755					-16	
-450				778					789					-11	
-300				801					810					-9	
-150			916	818				925	826				-9	-8	
0	883	908	908	830		897	918	914	837		-14	-10	-6	-7	
150	862	900	906	835		820	815	837	851		42	85	69	-16	
300	863	902	910	840		812	796	823	841		51	106	87	-1	
450	865	904	913	846		803	800	804	832		62	104	109	14	
600	866	906	915	854		800	799	781	830		66	107	134	24	
750	866	906	916	864		795	766	772	832		71	140	144	32	
900	865	906	916	876	547	793	771	760	833	552	72	135	156	43	-5
1050	864	904	915	883	596	784	780	791	836	602	80	124	124	47	-6
1200	862	901	913	890	603	782	781	796	817	604	80	120	117	73	-1
1350	860	897	909	892	602	778	745	778	775	601	82	152	131	117	1
1500	856	893	905	890	599	779	733	754	782	598	77	160	151	108	1
1650	854	887	900	886	592	783	732	721	779	588	71	155	179	107	4
1800	865	890	895	881	581	823	754	746	769	580	42	136	149	112	1
1950		908	906	875			862	868	795			46	38	80	
2100			913	870				895	859				18	11	
2250				864					856					8	
2400				853					851					2	
2550				838					839					-1	
2700				820					824					-4	
2850				788					793					-5	
3000															

NOTE: *Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition.*
Vehicle measurements forward of the vertical impact reference line are negative.
The crush profile grid is established prior to test based on an estimated impact point.

DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

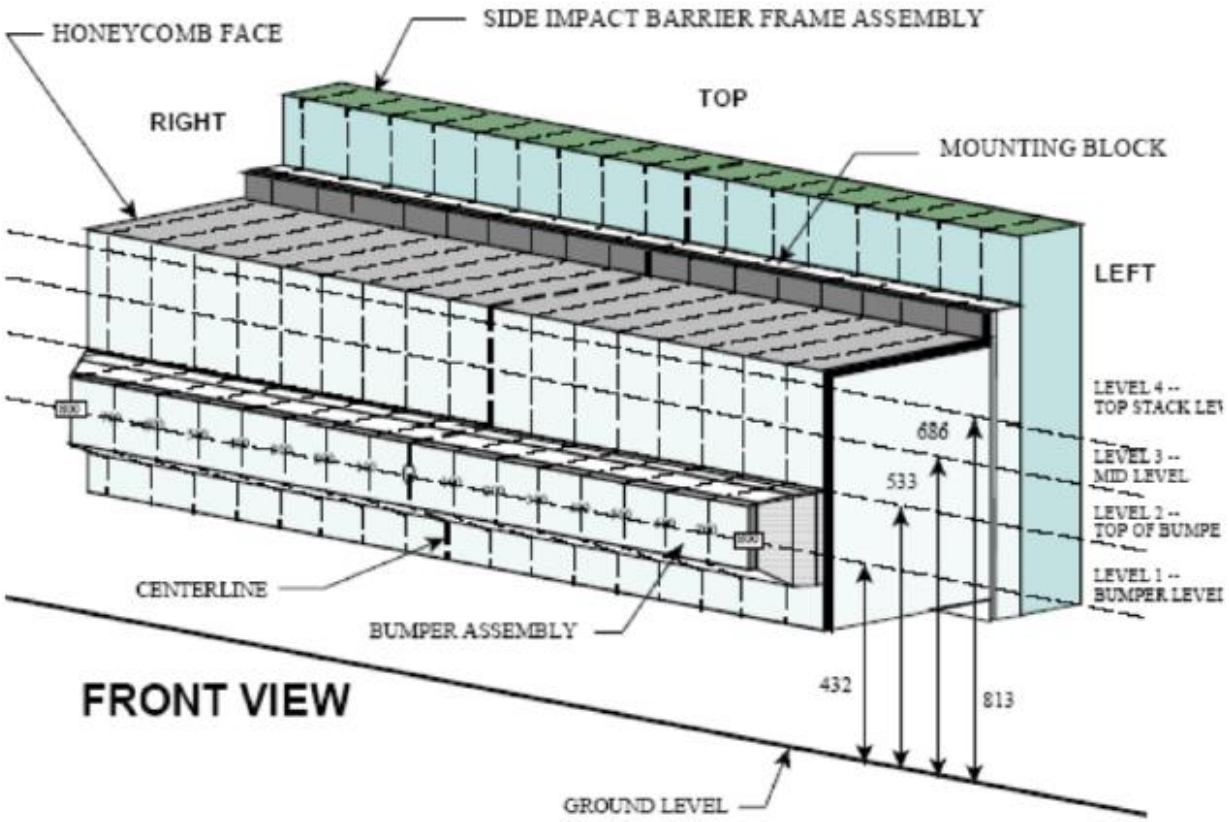
Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012

Vehicle Exterior Crush Measurements - Visual Representation



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	193	176	161	159	162	165	168	172	173	171	174	176	179	182	188	203	232
2	114	105	103	105	102	107	128	115	114	119	128	130	134	137	142	151	169
3	51	43	57	77	104	111	123	111	77	62	57	58	66	85	105	130	167
4	72	67	66	67	77	117	137	93	78	86	96	93	88	105	128	152	179

DATA SHEET NO. 13
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012
Test Time:	7:20Pm	Temperature:	18 ° C

A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 oz.)

B. For the 5-minute period after motion ceases: 0 oz.
(Maximum allowable is 5 oz.)

C. For the following 25 minutes: 0 oz.
(Maximum allowable is 1 oz./minute)

D. Spillage Details: No Spillage Occurred

FMVSS NO. 301 STATIC ROLLOVER DATA

ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	71	300	371
90° to 180°	65	300	365
180° to 270°	61	300	361
270° to 360°	71	300	371

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

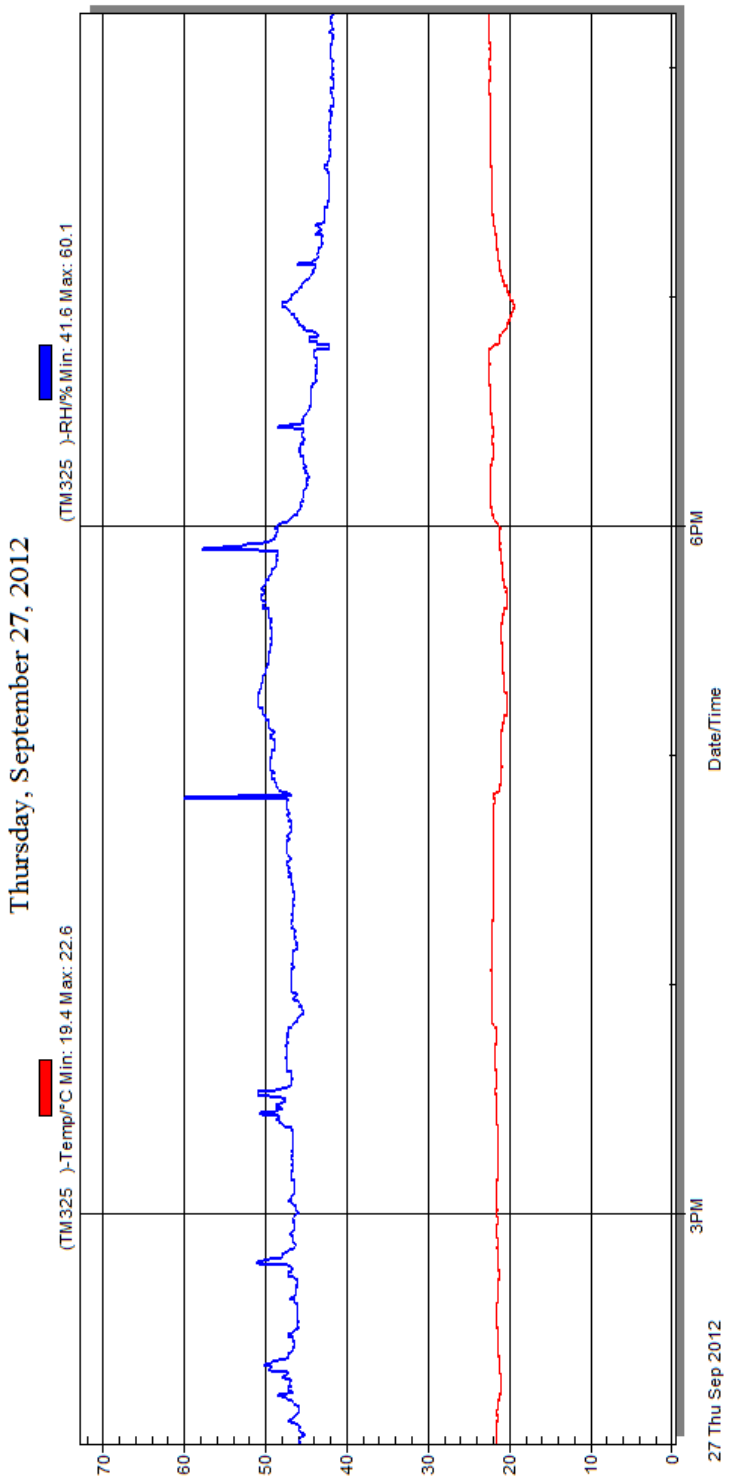
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0	0	
90° to 180°	0	0	0	
180° to 270°	0	0	0	
270° to 360°	0	0	0	

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 14
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle:	2013 Dodge Dart four door sedan	NHTSA No.:	MD0305
Test Program:	NCAP Side MDB Impact Test	Test Date:	9/27/2012



Temperature and Humidity Stabilization Chart/Data for Dummies and Test Vehicle

APPENDIX A

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76	Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View	A-42
77	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View	A-43
78	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View	A-43
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Figure A-1: As-Delivered Right Front 3/4 View of Test Vehicle

Figure A-2: As-Delivered Left Rear 3/4 View of Test Vehicle

Figure A-3: Pre-Test Frontal View of Test Vehicle

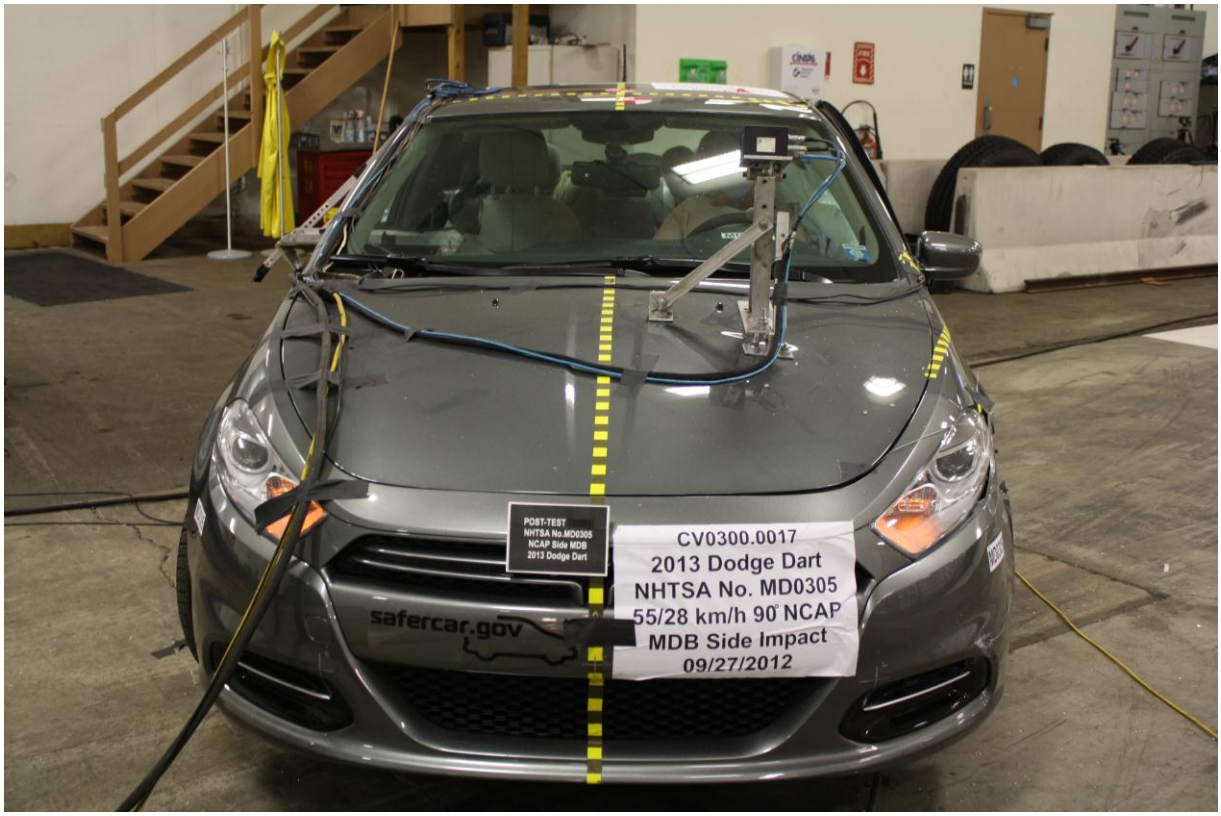


Figure A-4: Post-Test Frontal View of Test Vehicle

Figure A-5: Pre-Test Left Front ¾ View of Test Vehicle

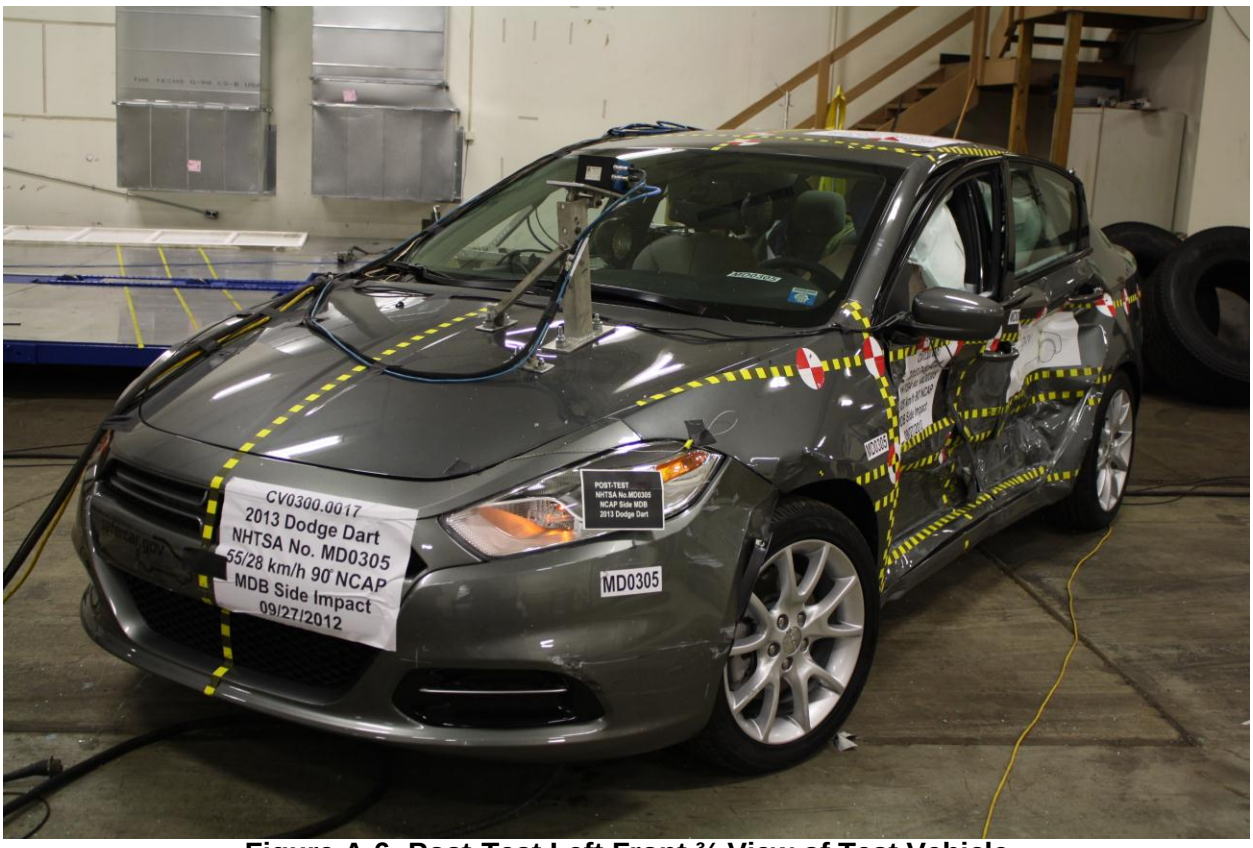


Figure A-6: Post-Test Left Front ¾ View of Test Vehicle

Figure A-7: Pre-Test Left Side View of Test Vehicle

Figure A-8: Post-Test Left Side View of Test Vehicle

Figure A-9: Pre-Test Left Rear ¾ View of Test Vehicle

Figure A-10: Post-Test Left Rear ¾ View of Test Vehicle

Figure A-11: Pre-Test Rear View of Test Vehicle

Figure A-12: Post-Test Rear Side View of Test Vehicle

Figure A-13: Pre-Test Right Side View of Test Vehicle

Figure A-14: Post-Test Right Side View of Test Vehicle

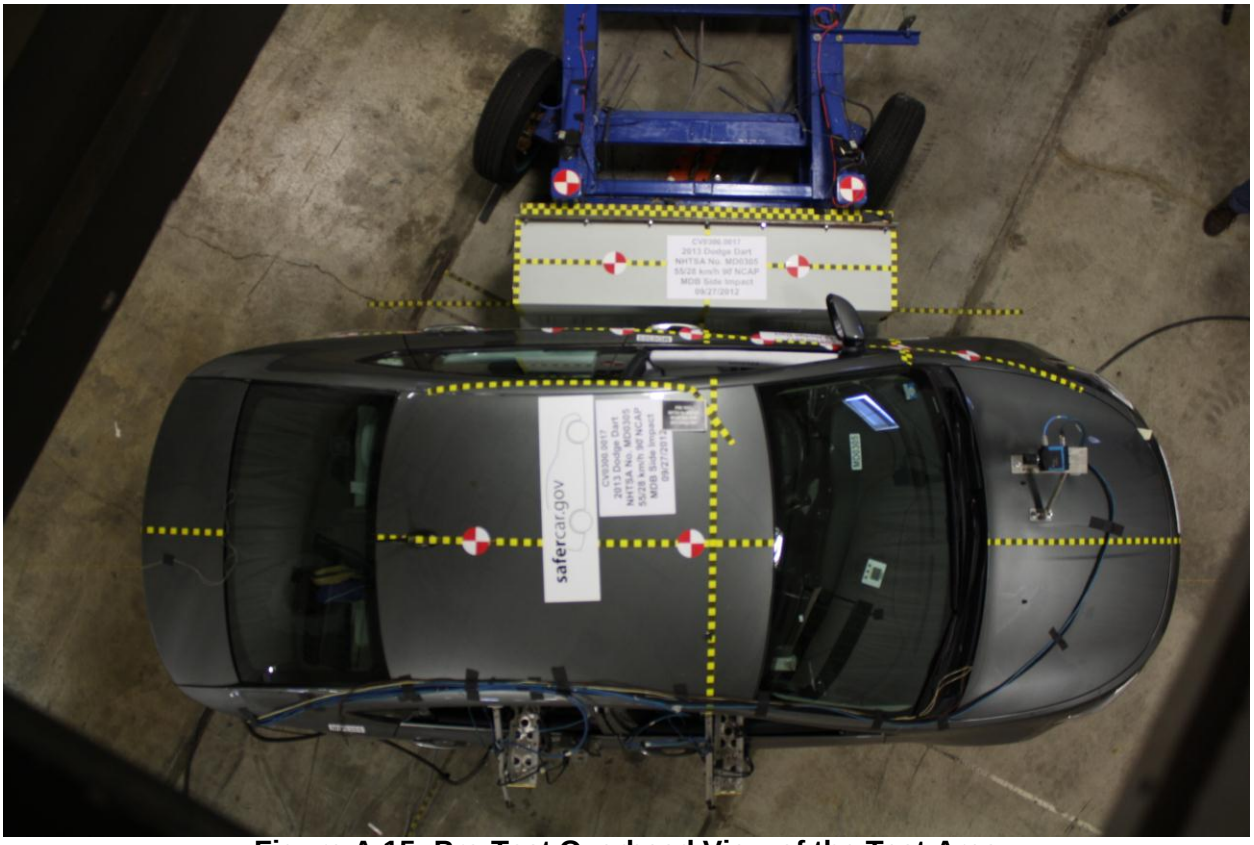


Figure A-15: Pre-Test Overhead View of the Test Area

Figure A-16: Post-Test Overhead View of Test Area

Figure A-17: Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle

Figure A-18: Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle

Figure A-19: Pre-Test Close-up View of Impact Point Target

Figure A-20: Post-Test Close-up View of Impact Point Target

Figure A-21: Pre-Test Left Front Door Latch Close-Up

Figure A-22: Post-Test Left Front Door Latch Close-Up

Figure A-23: Pre-Test Left Rear Door Latch Close-Up

Figure A-24: Post-Test Left Rear Door Latch Close-Up

Figure A-25: Pre-Test Front Close-up View of Driver Dummy

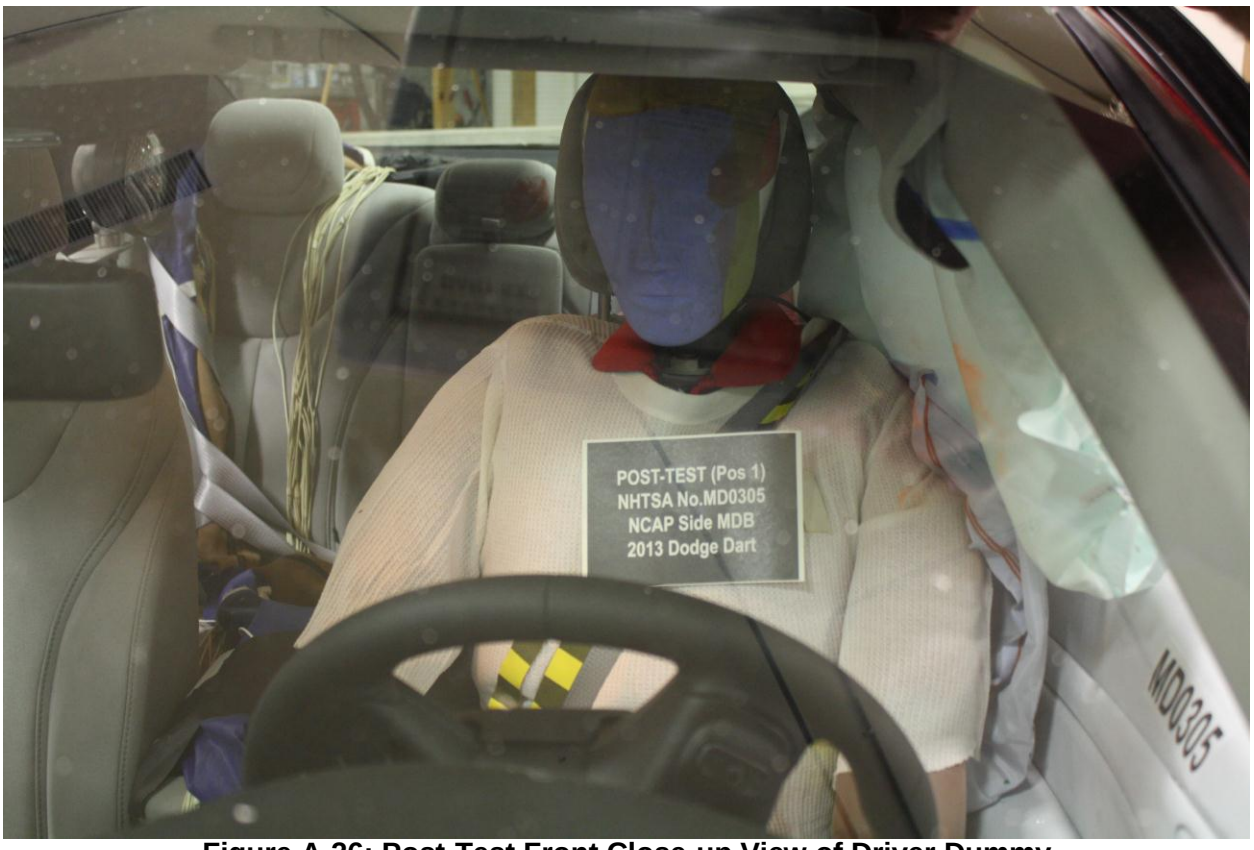


Figure A-26: Post-Test Front Close-up View of Driver Dummy

Figure A-27: Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking

Figure A-28: Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View

Figure A-29: Post-Test Left Side View of Driver Dummy Shoulder and Door Top View

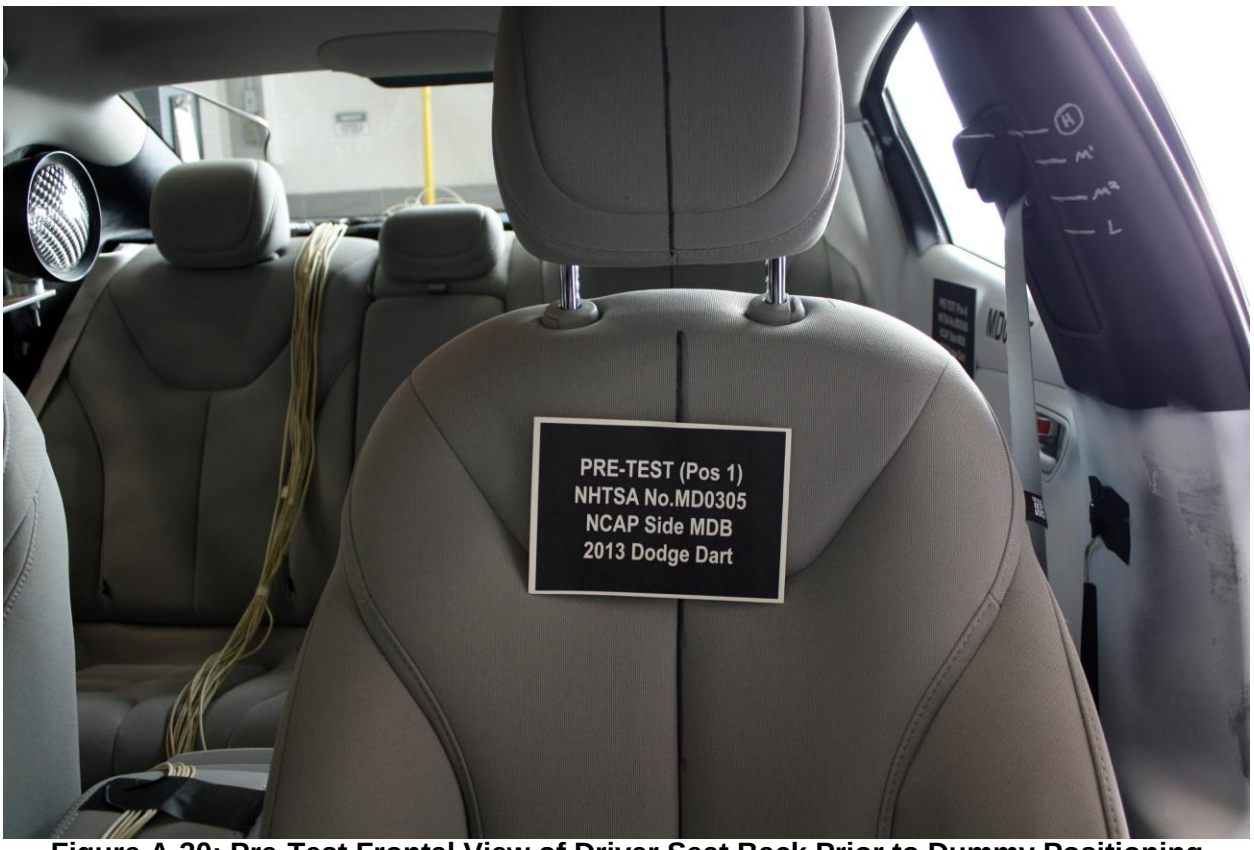


Figure A-30: Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning

Figure A-31: Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint

Figure A-32: Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning

Figure A-33: Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan

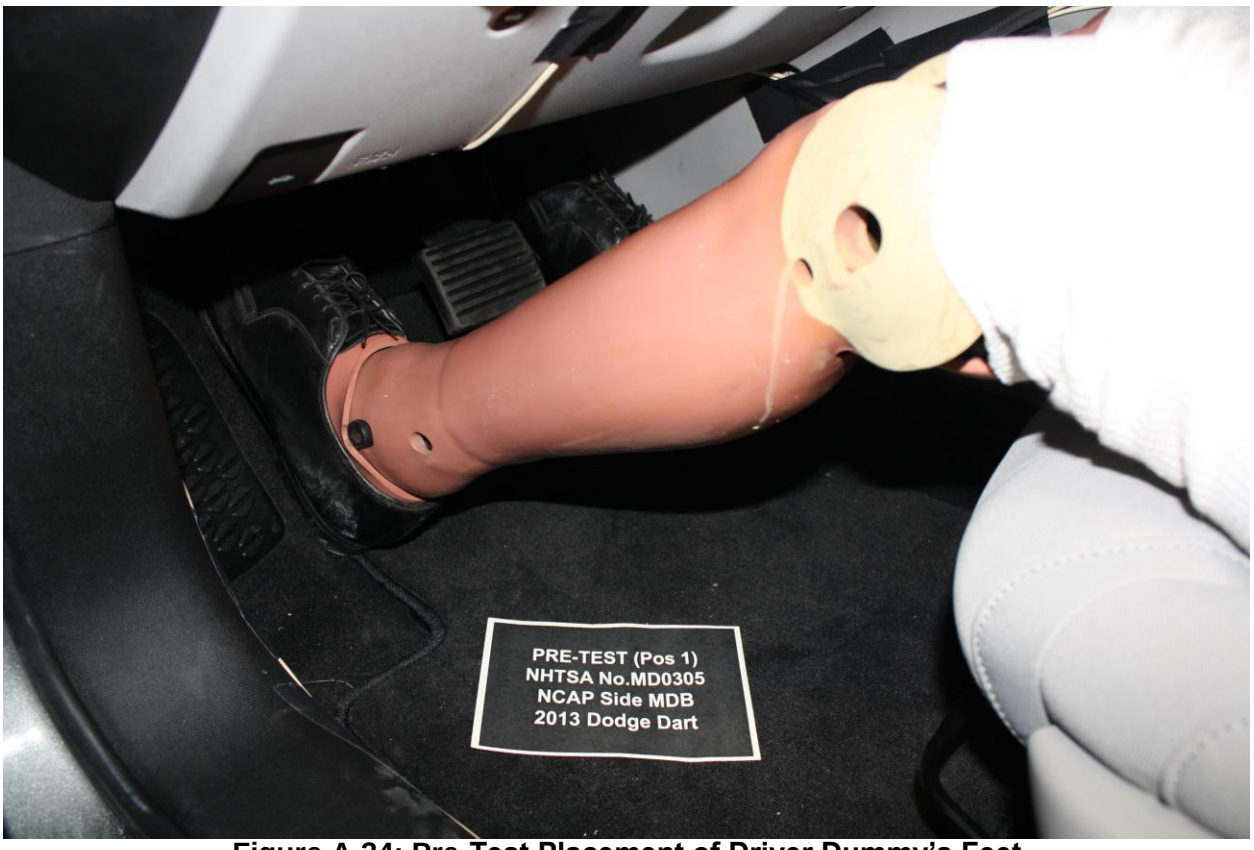


Figure A-34: Pre-Test Placement of Driver Dummy's Feet

Figure A-35: Pre-Test View of Belt Anchorage for Driver Dummy

Figure A-36: Pre-Test Left Side View of Steering Wheel

Figure A-37: View of Disengaged Parking Brake

Figure A-38: Pre-Test View of Parking Brake

Figure A-39: Pre-test Close-Up Left Side View of Driver Seat Track

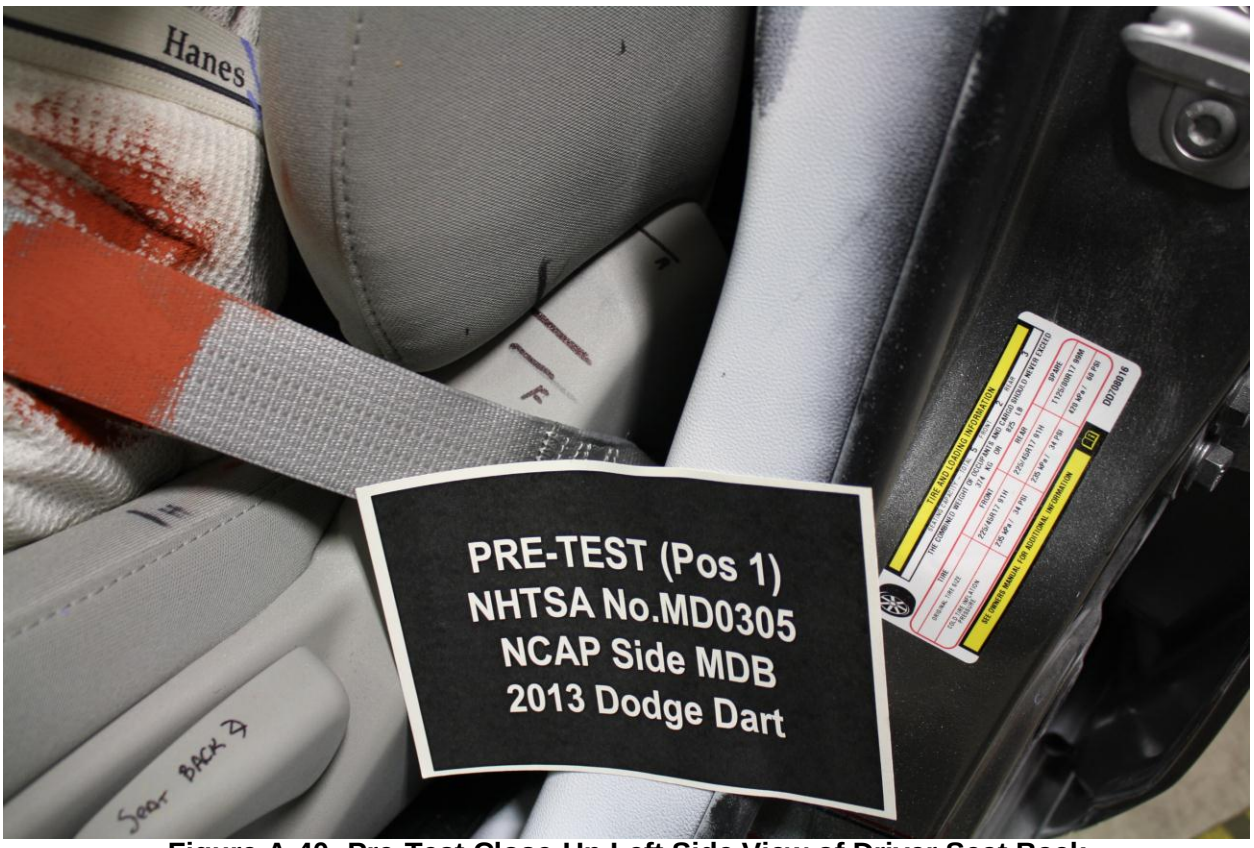


Figure A-40: Pre-Test Close-Up Left Side View of Driver Seat Back

Figure A-41: Pre-Test Close-Up View of Driver Seat Back or Head Restraint

Figure A-42: Pre-Test Driver Dummy and Door Clearance View

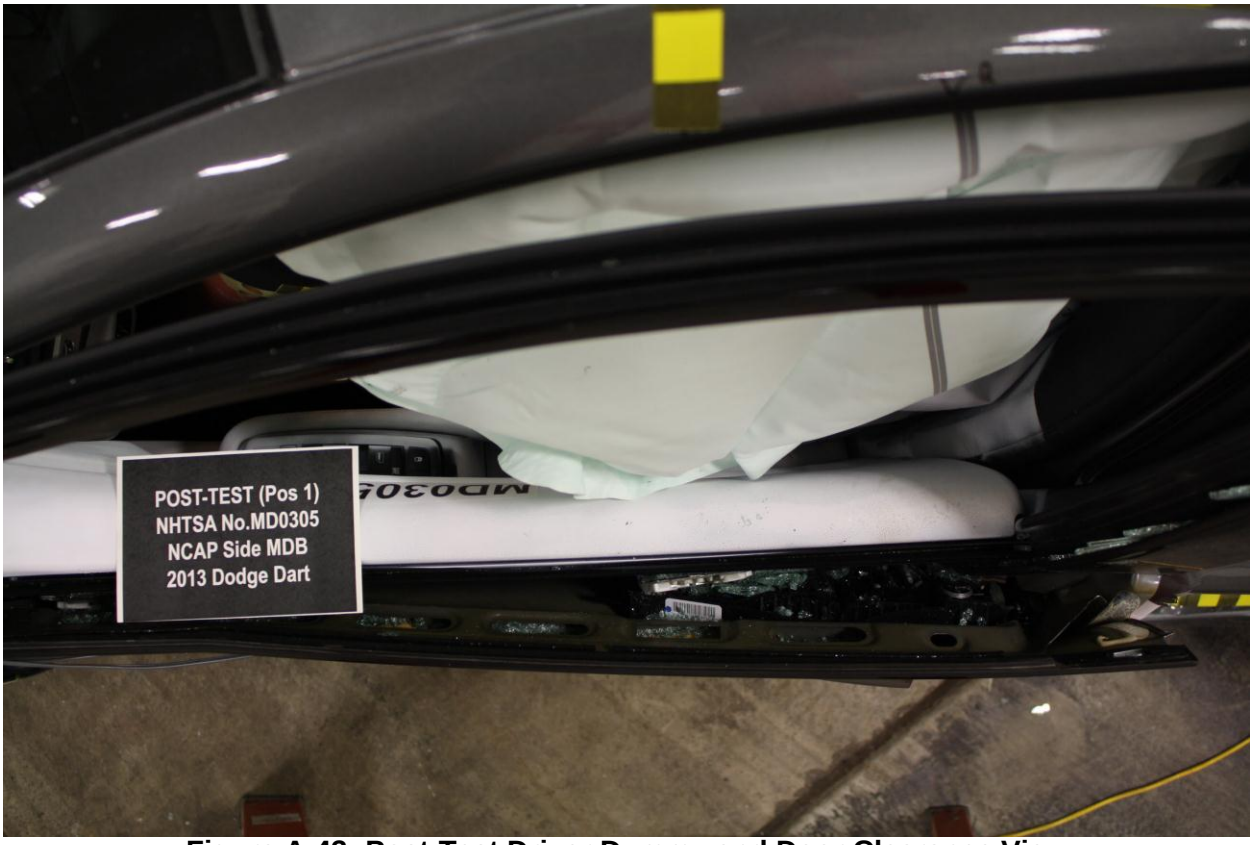


Figure A-43: Post-Test Driver Dummy and Door Clearance View

Figure A-44: Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment

Figure A-45: Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment

Figure A-46: Pre-Test Driver Inner Door Panel View

Figure A-47: Post-Test Driver Inner Door Panel View

Figure A-48: Post-Test Driver Dummy Close-Up Head Contact with Vehicle View

Figure A-49: Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View

Figure A-50: Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View

Figure A-51: Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View

Figure A-52: Post-Test Driver Dummy Close-Up Pelvis Contact View

Figure A-53: Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View

Photo Not Applicable

Figure A-54: Post-Test Driver Dummy Close-Up Knee Contact View

Figure A-55: Pre-Test Left Side View of Passenger Dummy Showing Belt and Chalking

Figure A-56: Pre-Test Left Side View of Passenger Dummy Shoulder and Door Top View

Figure A-57: Post-Test Left Side View of Passenger Dummy Shoulder and Door Top View

Figure A-58: Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning

Figure A-59: Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint

Figure A-60: Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning

Figure A-61: Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan

Figure A-62: Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket

Figure A-63: Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level

Figure A-64: Pre-Test Placement of Rear Passenger Dummy's Feet

Figure A-65: Pre-Test View of Belt Anchorage for Rear Passenger Dummy

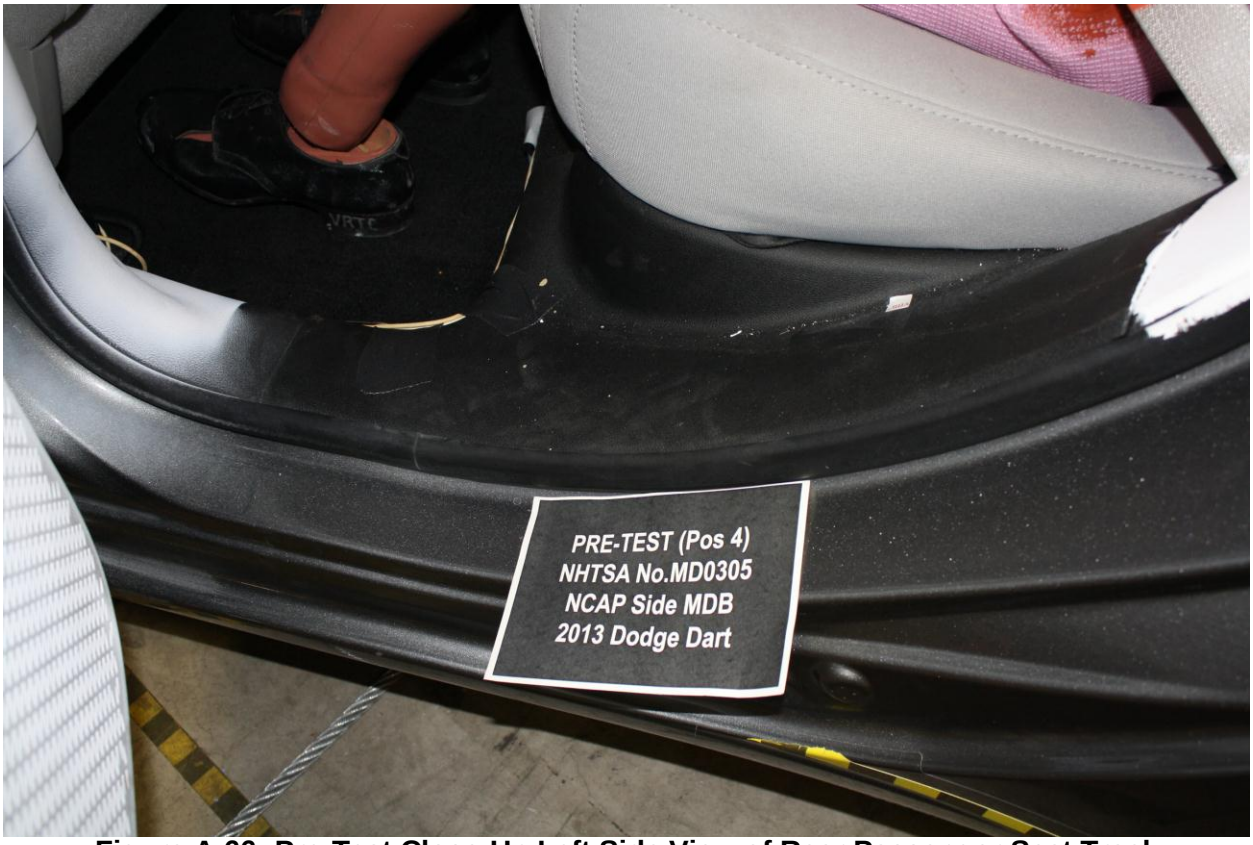


Figure A-66: Pre-Test Close-Up Left Side View of Rear Passenger Seat Track

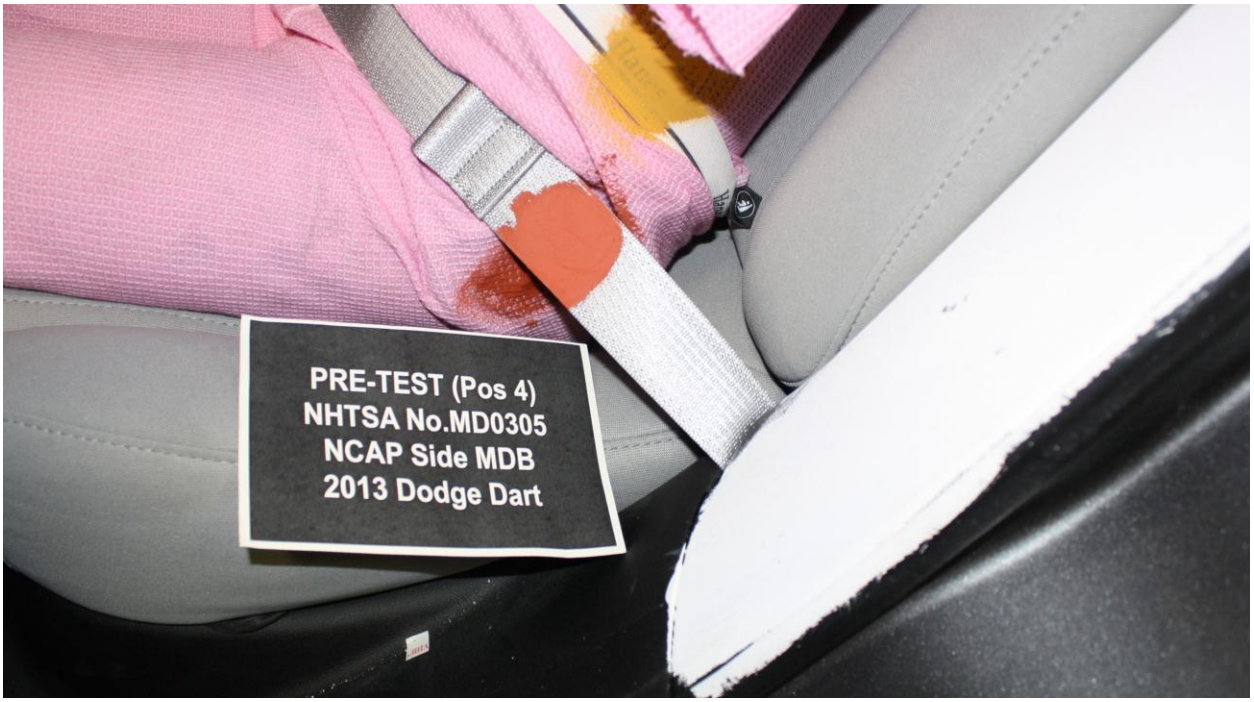


Figure A-67: Pre-Test Close-Up Left Side View of Rear Passenger Seat Back

Figure A-68: Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint

Figure A-69: Pre-Test Passenger Dummy and Door Clearance View

Figure A-70: Post-Test Passenger Dummy and Door Clearance View

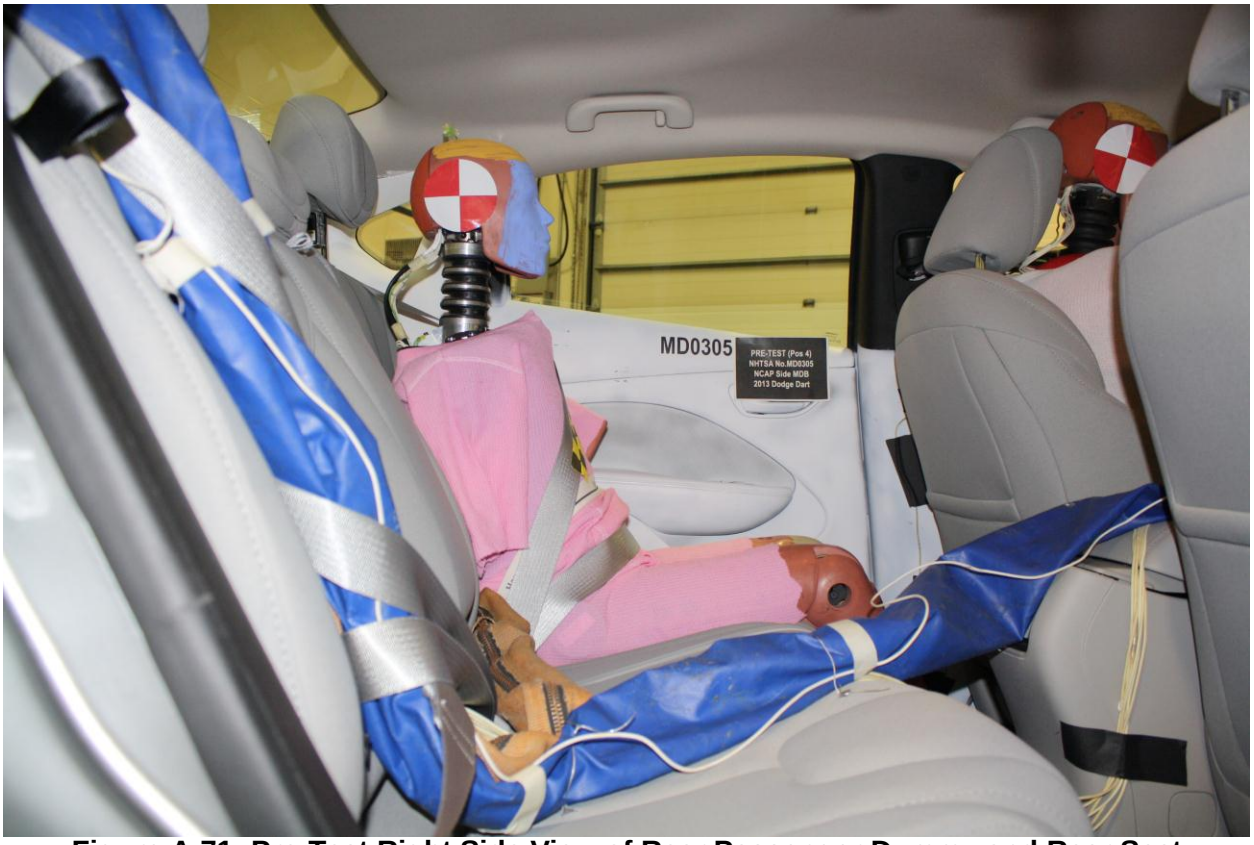


Figure A-71: Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

Figure A-72: Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

Figure A-73: Pre-Test Passenger Inner Door Panel View

Figure A-74: Post-Test Passenger Inner Door Panel View

Figure A-75: Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View

Figure A-76: Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View

Figure A-77: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View

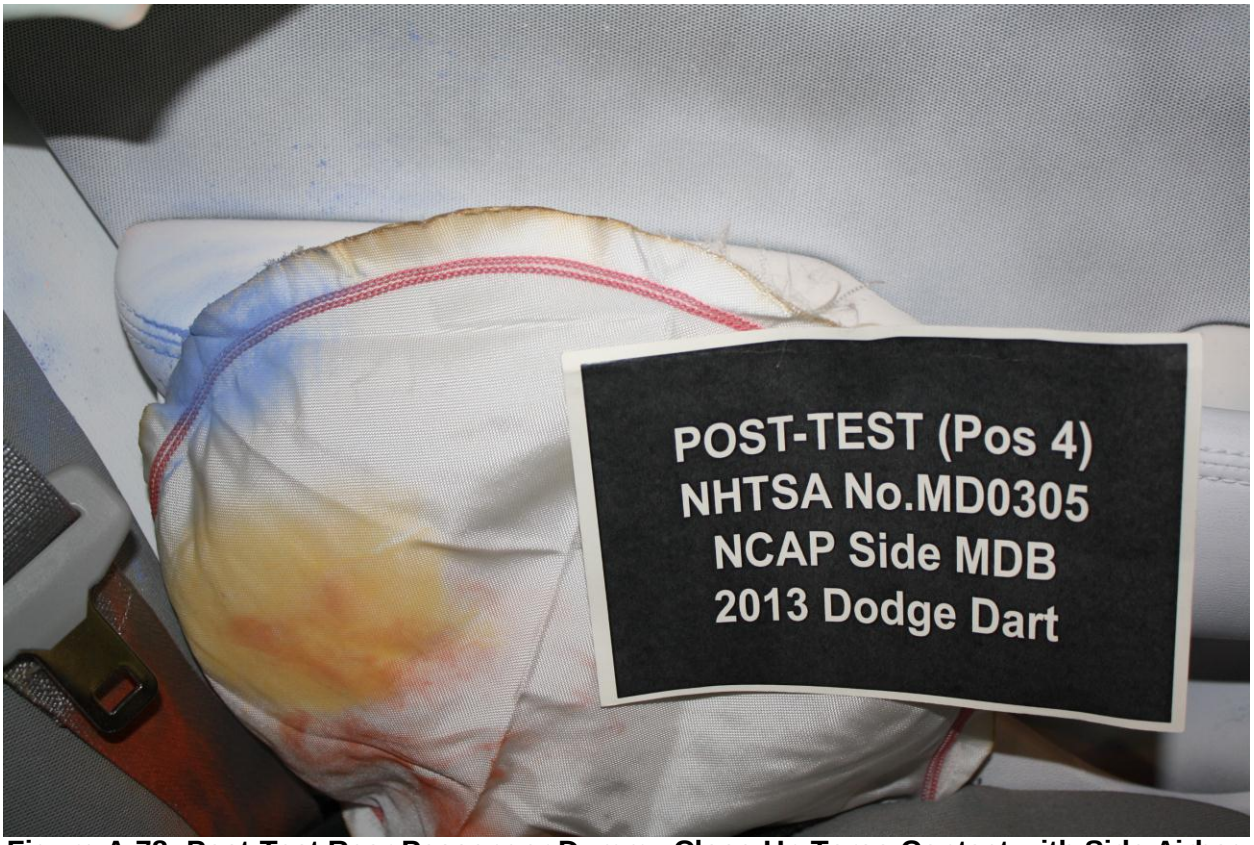


Figure A-78: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View

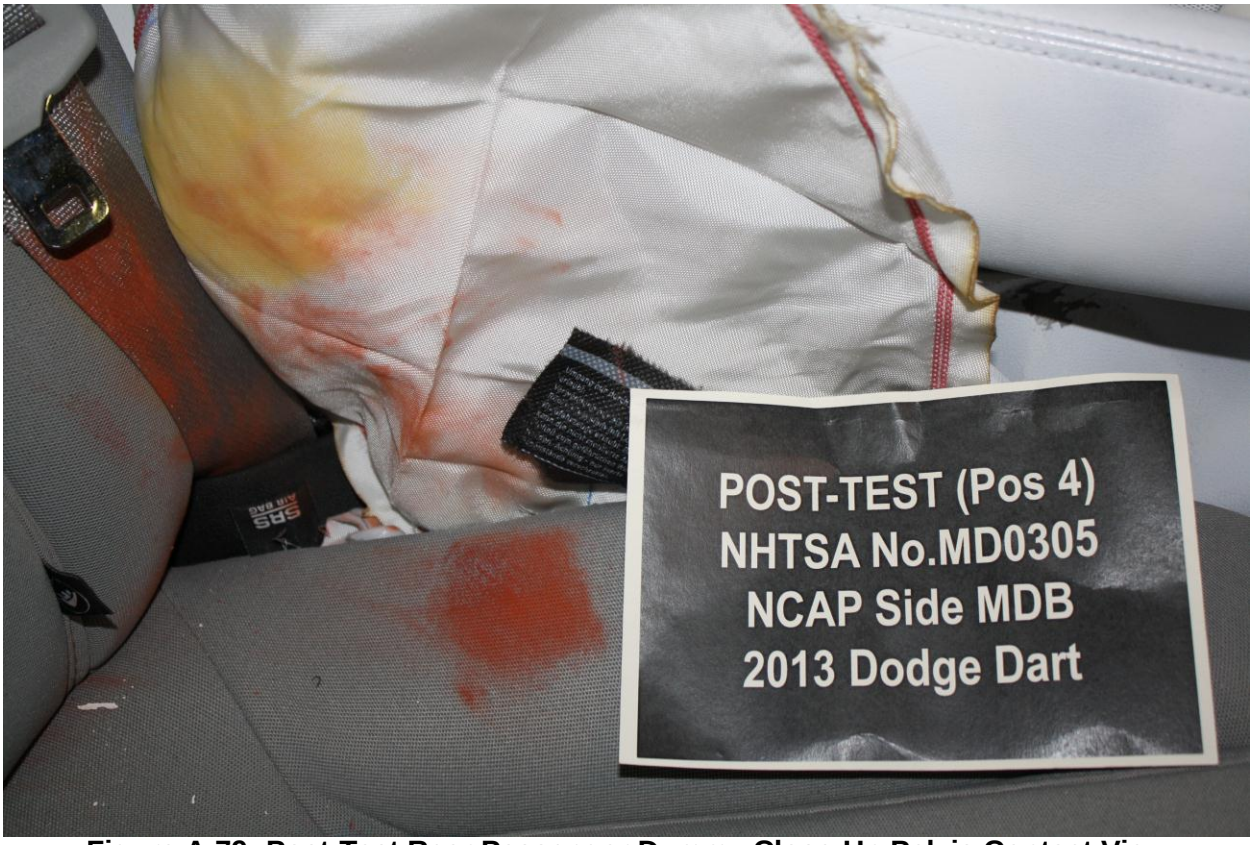


Figure A-79: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View

Figure A-80: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View

Figure A-81: Post-Test Rear Passenger Dummy Close-Up Knee Contact View

Figure A-82: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

Figure A-83: Post-Test View of Fuel Filler Cap or Fuel Filler Neck

Figure A-84: Pre-Test Front View of MDB Impactor Face

Figure A-85: Post-Test Front View of MDB Impactor Face

Figure A-86: Pre-Test Top View of MDB Impactor Face

Figure A-87: Post-Test Top View of MDB Impactor Face

Figure A-88: Pre-Test Left Side View of MDB Impactor Face

Figure A-89: Post-Test Left Side View of MDB Impactor Face

Figure A-90: Pre-Test Right Side View of MDB Impactor Face

Figure A-91: Post-Test Right Side View of MDB Impactor Face

Figure A-92: Close-Up View of Vehicle's Certification Label

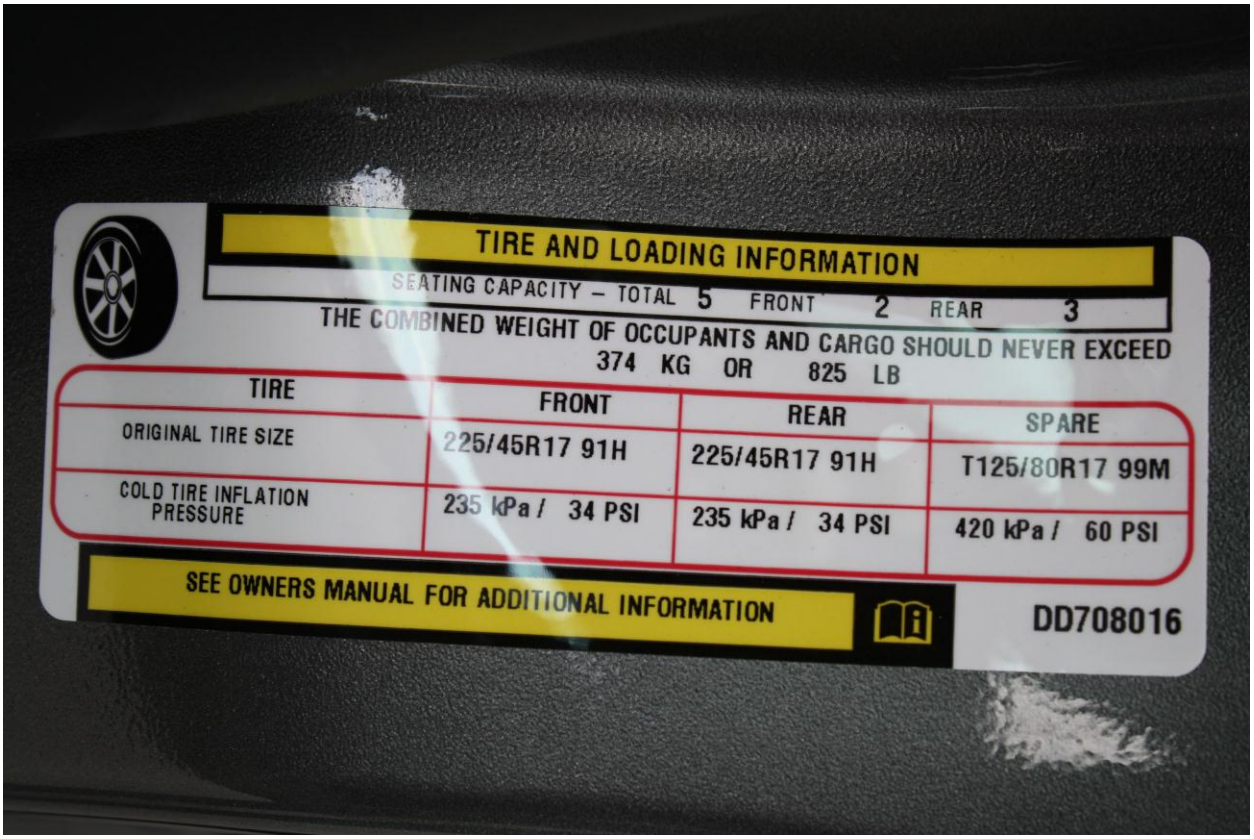


Figure A-93: Close-Up View of Vehicle's Tire Information Placard or Label

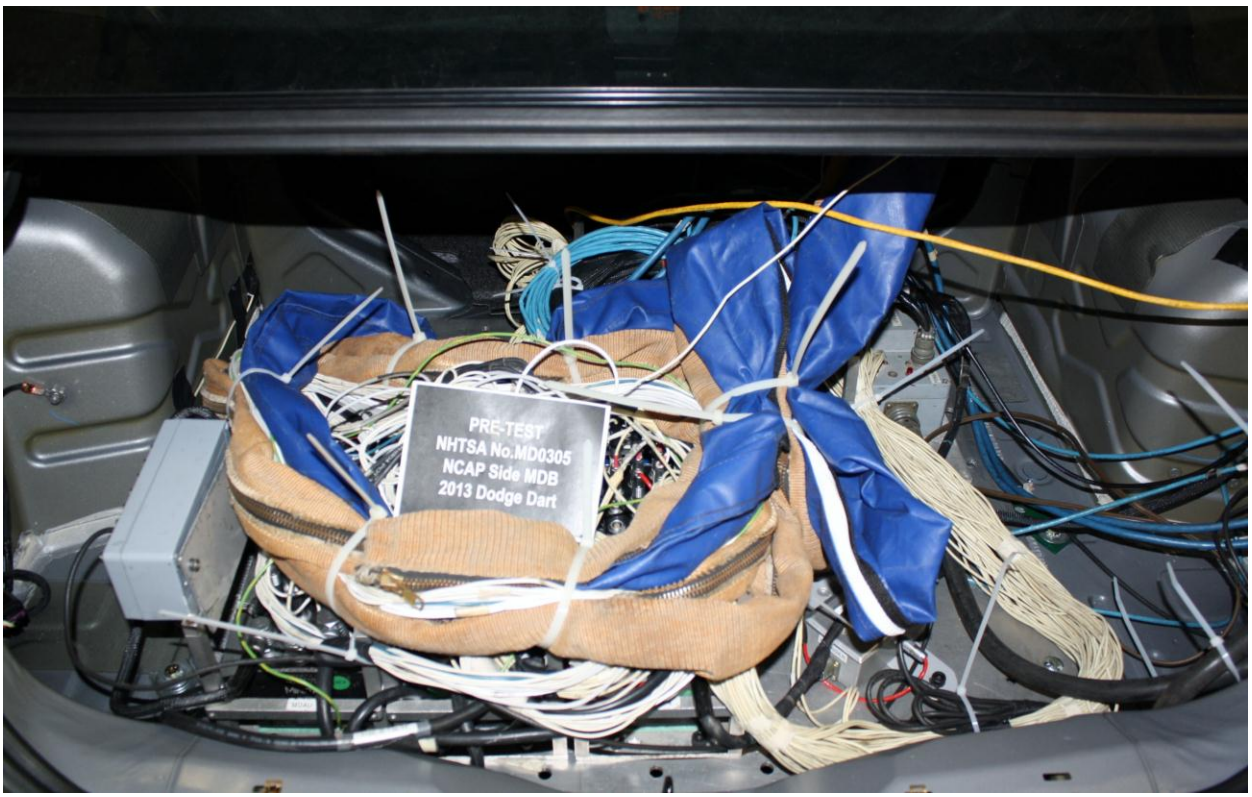


Figure A-94: Pre-Test Ballast View

Figure A-95: Post-Test Primary and Redundant Speed Trap Read-Out

Figure A-96: FMVSS No. 301 Static Rollover 0 Degrees

Figure A-97: FMVSS No. 301 Static Rollover 90 Degrees

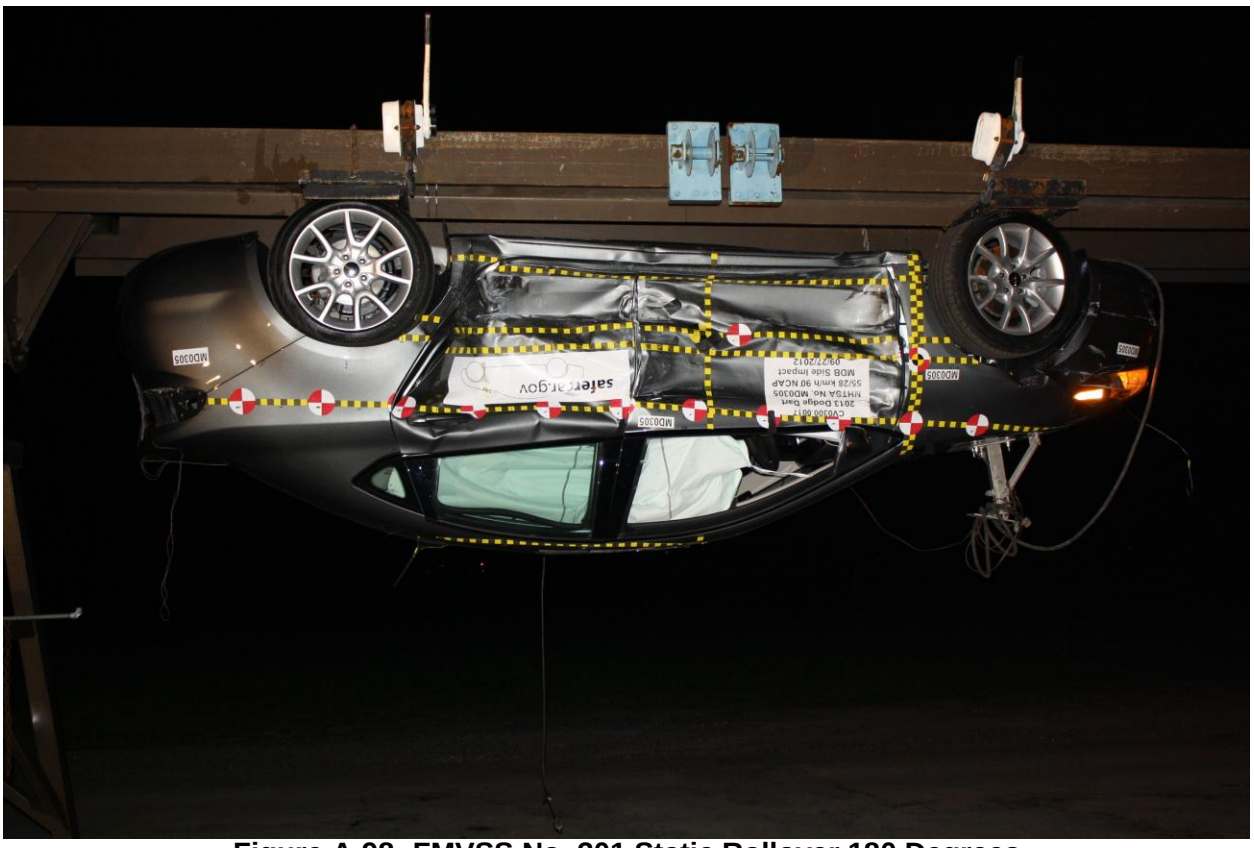


Figure A-98: FMVSS No. 301 Static Rollover 180 Degrees

Figure A-99: FMVSS No. 301 Static Rollover 270 Degrees

Figure A-100: FMVSS No. 301 Static Rollover 360 Degrees

Figure A-101: Impact Event

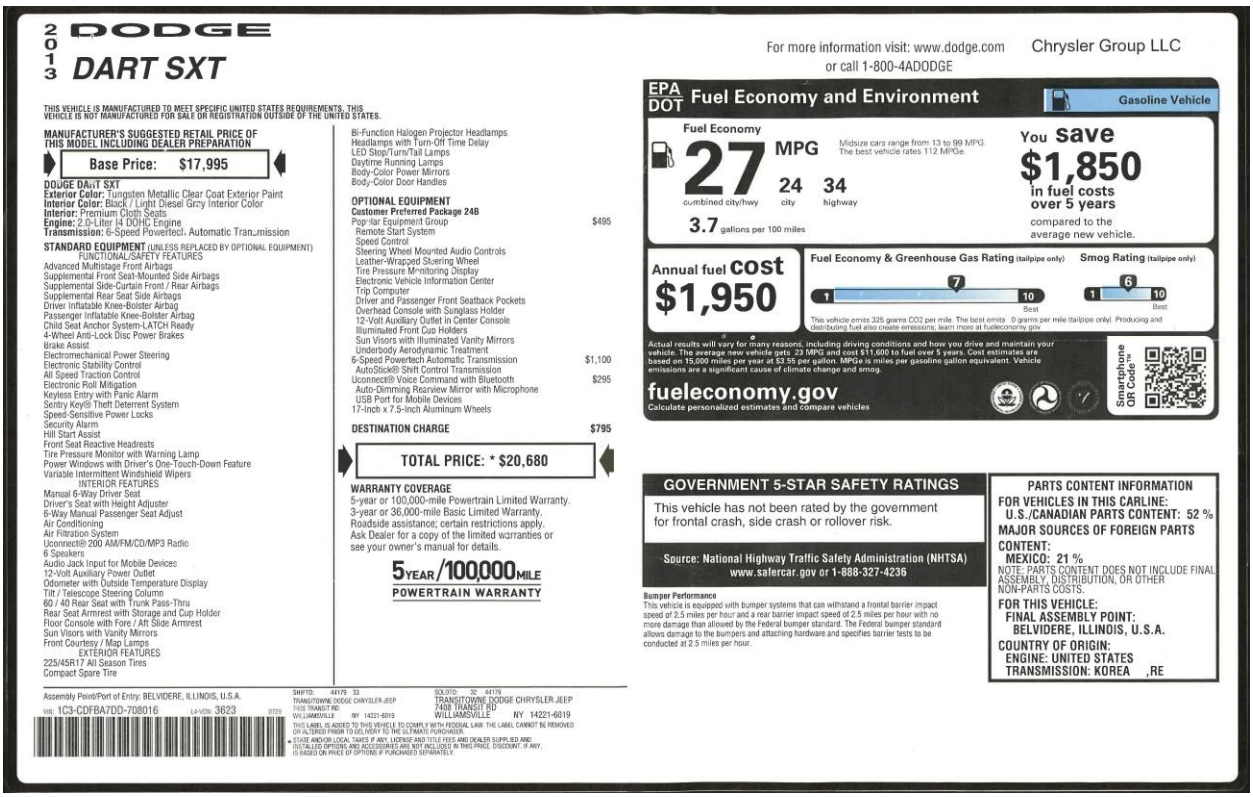
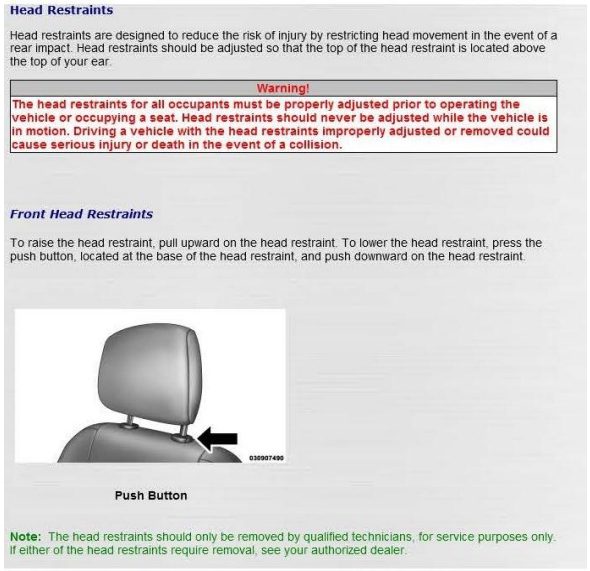


Figure A-102: Monroney Label



Head Restraints

Head restraints are designed to reduce the risk of injury by restricting head movement in the event of a rear impact. Head restraints should be adjusted so that the top of the head restraint is located above the top of your ear.

Warning!

The head restraints for all occupants must be properly adjusted prior to operating the vehicle or occupying a seat. Head restraints should never be adjusted while the vehicle is in motion. Driving a vehicle with the head restraints improperly adjusted or removed could cause serious injury or death in the event of a collision.

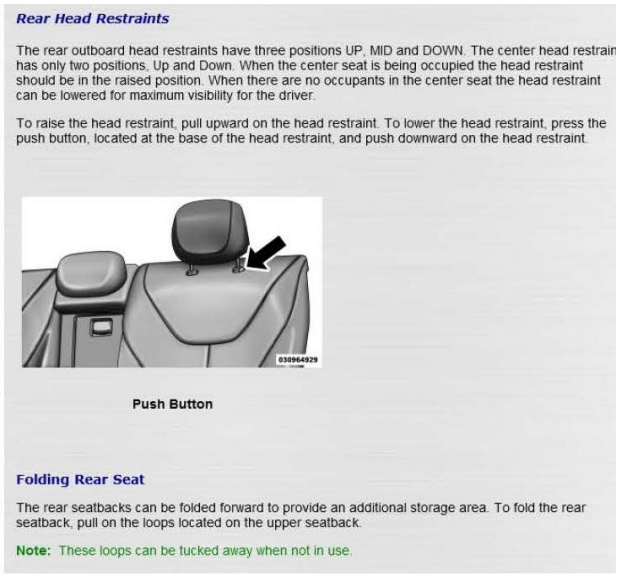
Front Head Restraints

To raise the head restraint, pull upward on the head restraint. To lower the head restraint, press the push button, located at the base of the head restraint, and push downward on the head restraint.

Push Button

Note: The head restraints should only be removed by qualified technicians, for service purposes only. If either of the head restraints require removal, see your authorized dealer.

Figure A-103: Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



Rear Head Restraints

The rear outboard head restraints have three positions UP, MID and DOWN. The center head restrain has only two positions, Up and Down. When the center seat is being occupied the head restraint should be in the raised position. When there are no occupants in the center seat the head restraint can be lowered for maximum visibility for the driver.

To raise the head restraint, pull upward on the head restraint. To lower the head restraint, press the push button, located at the base of the head restraint, and push downward on the head restraint.

Push Button

Folding Rear Seat

The rear seatbacks can be folded forward to provide an additional storage area. To fold the rear seatback, pull on the loops located on the upper seatback.

Note: These loops can be tucked away when not in use.

Figure A-104: Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B

VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

Driver & Passenger Dummy Instrumentation Plots

Fig.	Description	Page
1	Driver Head Acceleration (X) Primary vs. Time	B-5
2	Driver Head Acceleration (Y) Primary vs. Time	B-5
3	Driver Head Acceleration (Z) Primary vs. Time	B-6
4	Driver Head Resultant Acceleration Primary vs. Time	B-6
5	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-7
6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-7
7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-8
8	Driver Thorax Rib Deflection Maximum vs. Time	B-8
9	Driver Anterior Abdominal Force (Y) vs. Time	B-9
10	Driver Middle Abdominal Force (Y) vs. Time	B-9
11	Driver Posterior Abdominal Force (Y) vs. Time	B-10
12	Driver Total Abdominal Force (Y) vs. Time	B-10
13	Driver Pubic Symphysis Force (Y) vs. Time	B-11
14	Passenger Head Acceleration (X) vs. Time Primary	B-11
15	Passenger Head Acceleration (Y) vs. Time Primary	B-12
16	Passenger Head Acceleration (Z) vs. Time Primary	B-12
17	Passenger Head Resultant Acceleration Primary vs. Time	B-13
18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-13
19	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-14
20	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-14
21	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-15
22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-15
23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-16
24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-16

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov.

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

V2P1 Head x [g , CFC_1000]

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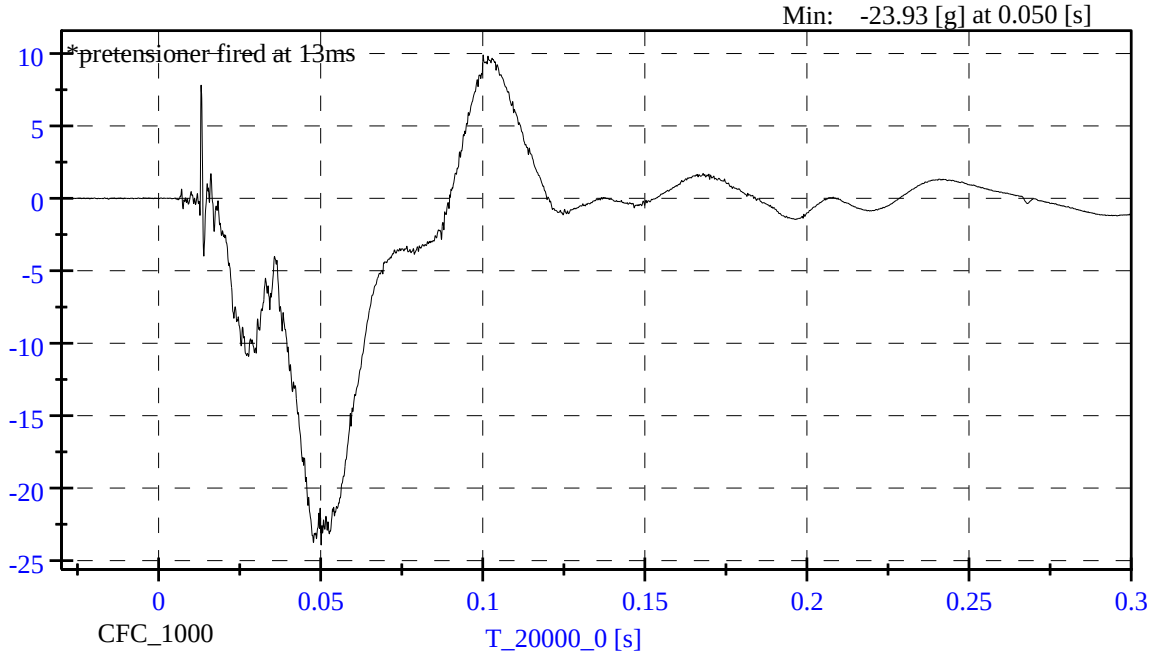
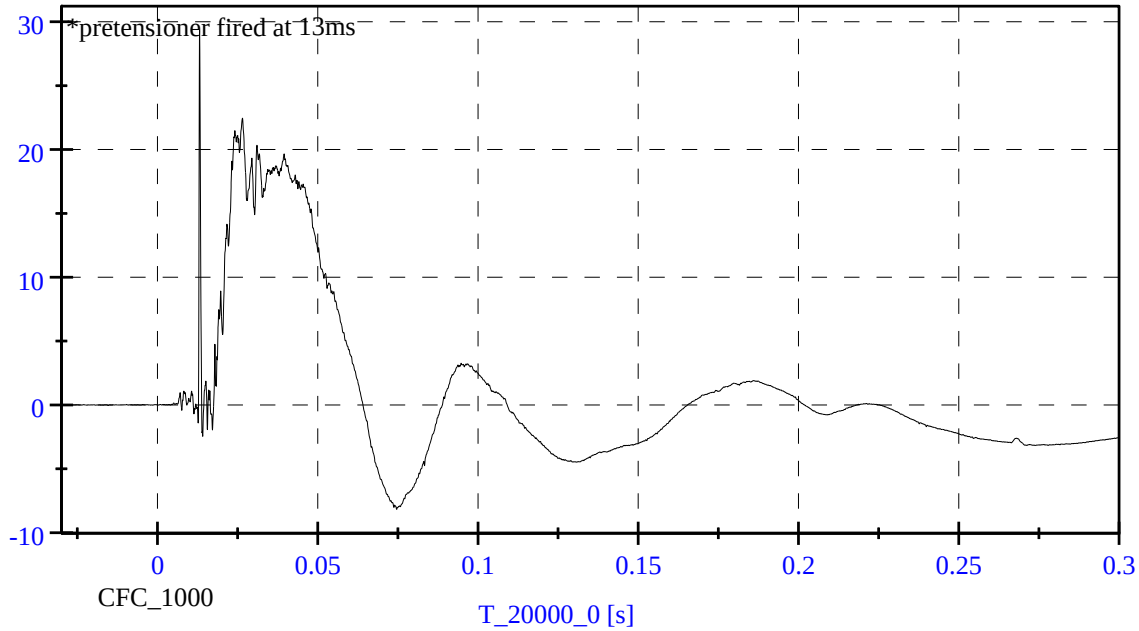
Min: -23.93 [g] at 0.050 [s]



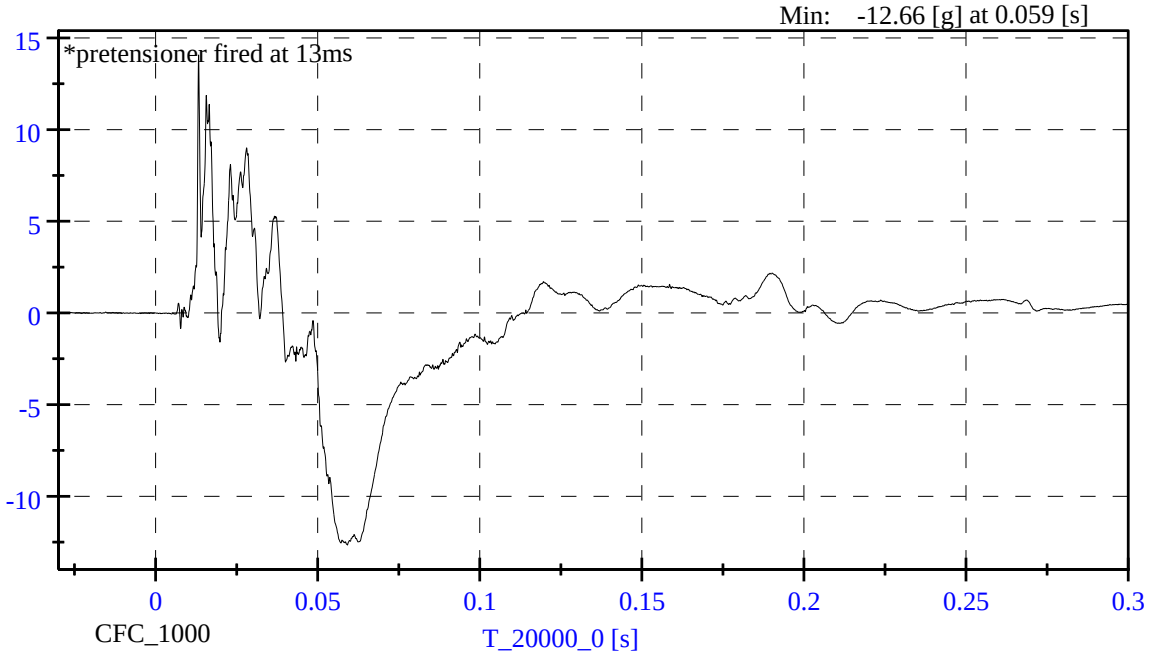
V2P1 Head y [g , CFC_1000]

Max: 29.34 [g] at 0.013 [s]
Min: -8.17 [g] at 0.075 [s]



V2P1 Head z [g , CFC_1000]

Max: 14.07 [g] at 0.013 [s]
Min: -12.66 [g] at 0.059 [s]



V2P1 Headform Resultant [g, CFC_1000]

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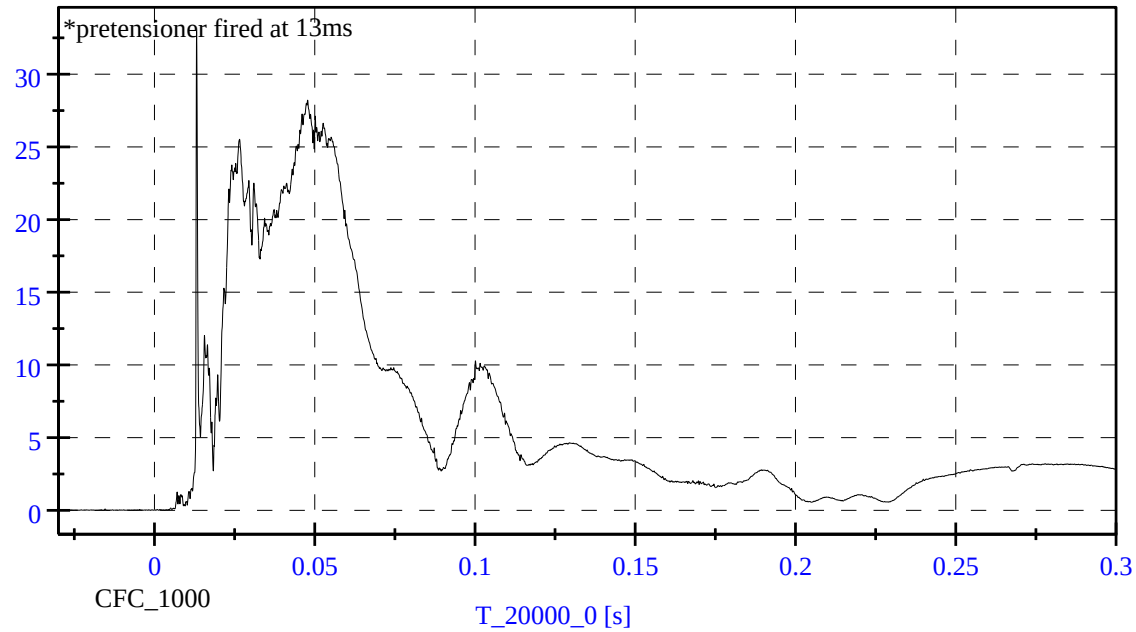
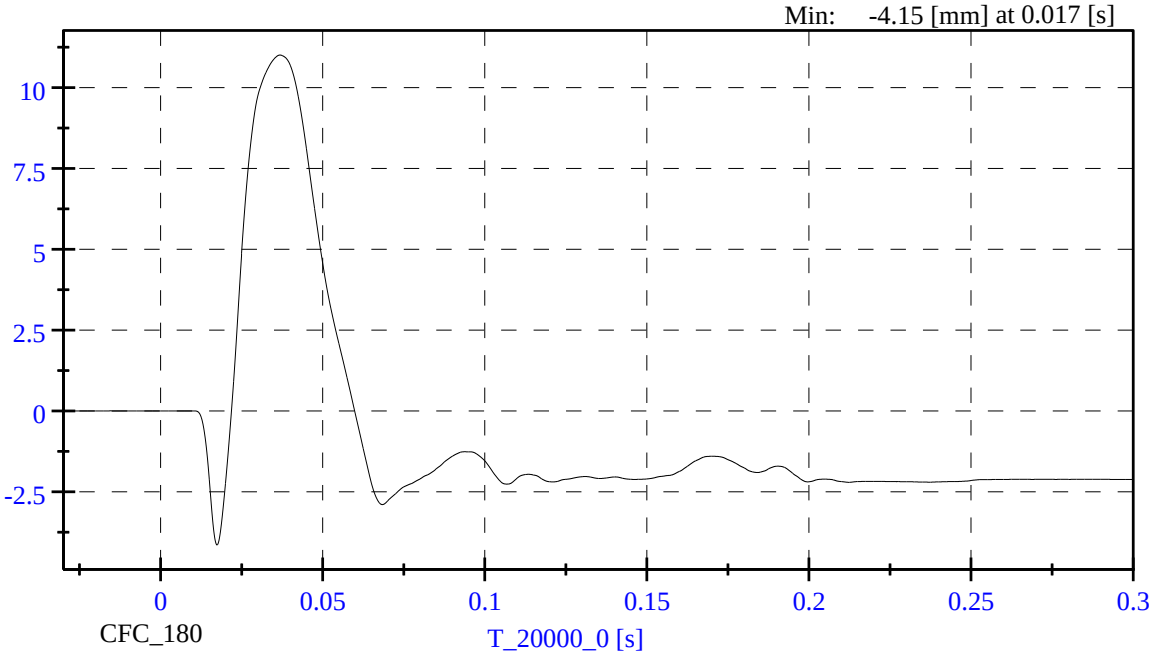
Min: 0.00 [g] at -0.010 [s]



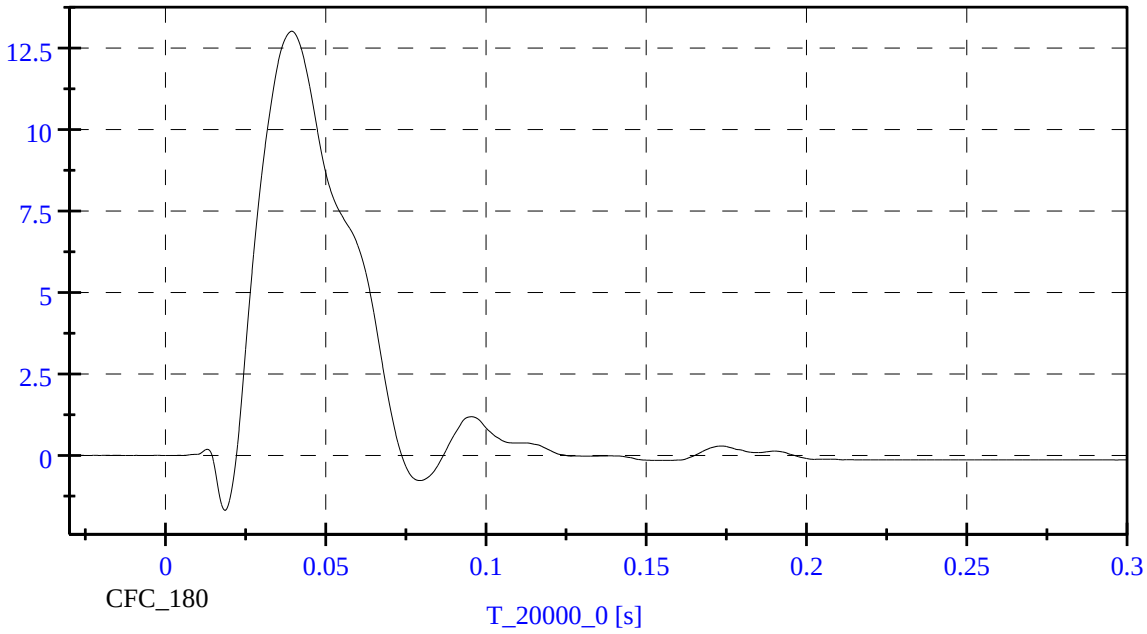
V2P1 Upper Thorax Rib Dy [mm , CFC_180]

Max: 11.01 [mm] at 0.037 [s]
Min: -4.15 [mm] at 0.017 [s]



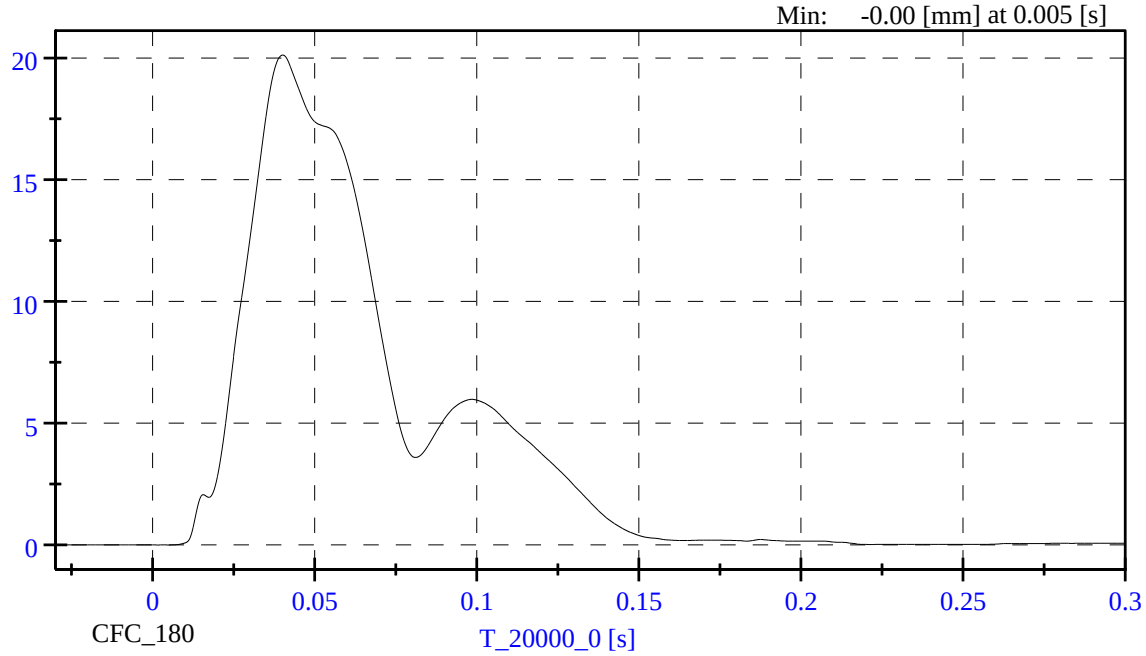
V2P1 Middle Thorax Rib Dy [mm , CFC_180]

Max: 13.02 [mm] at 0.039 [s]
Min: -1.69 [mm] at 0.019 [s]



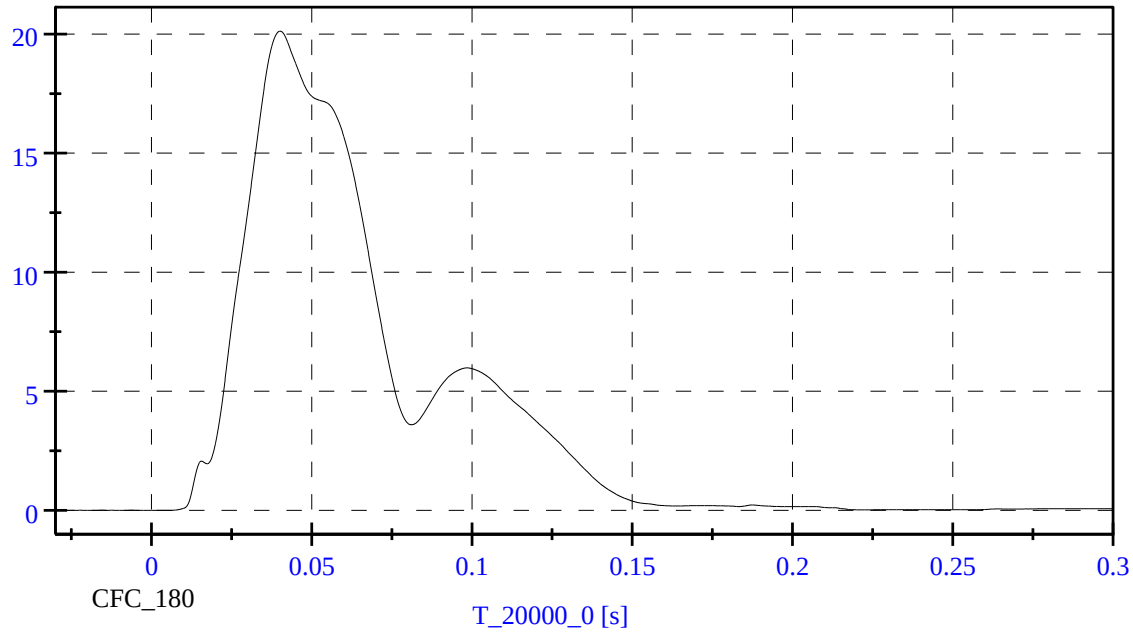
V2P1 Lower Thorax Rib Dy [mm , CFC_180]

Max: 20.12 [mm] at 0.040 [s]
Min: -0.00 [mm] at 0.005 [s]



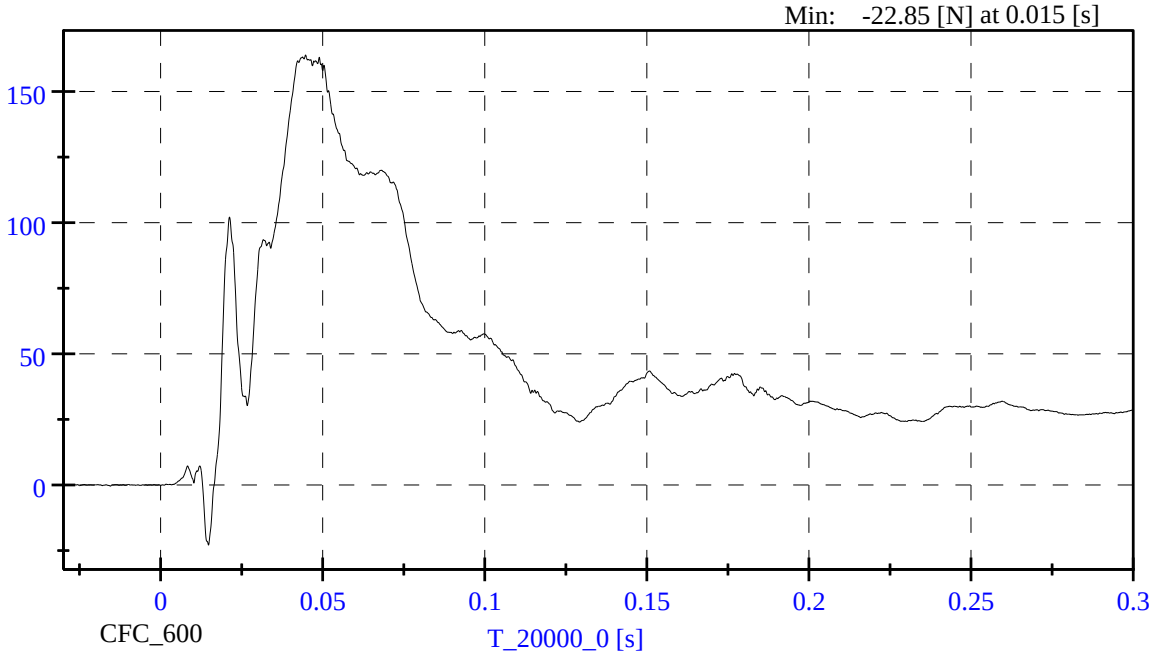
V2P1 Max Thorax Rib Def [mm , CFC_180]

Max: 20.12 [mm] at 0.040 [s]
Min: -0.00 [mm] at 0.005 [s]



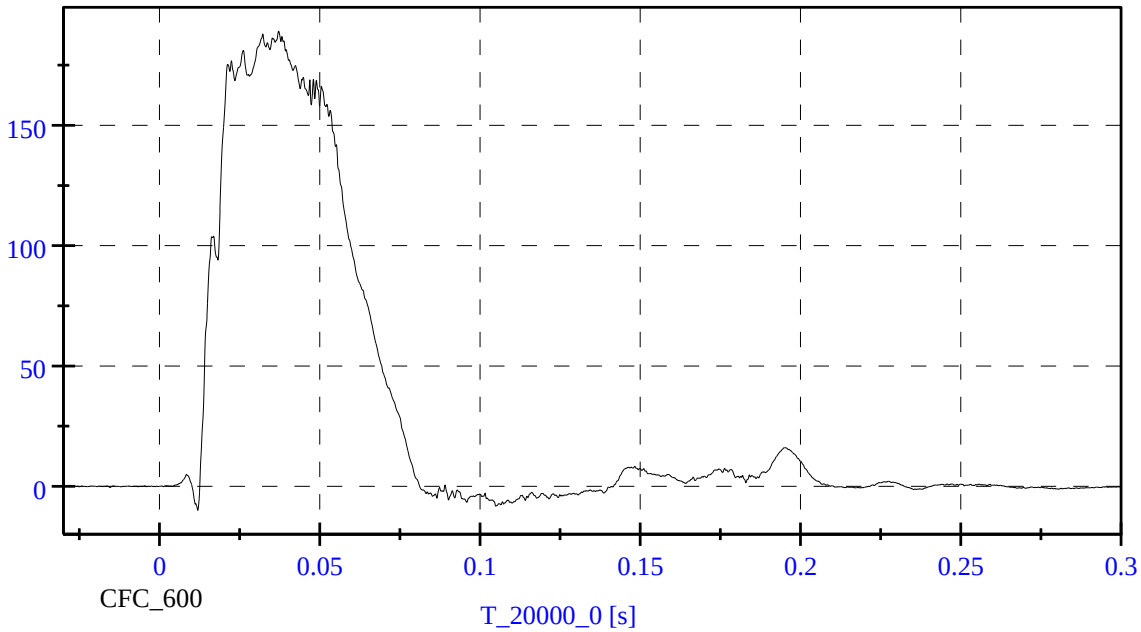
V2P1 Front Abdomen Fy [N , CFC_600]

Max: 163.88 [N] at 0.045 [s]
Min: -22.85 [N] at 0.015 [s]



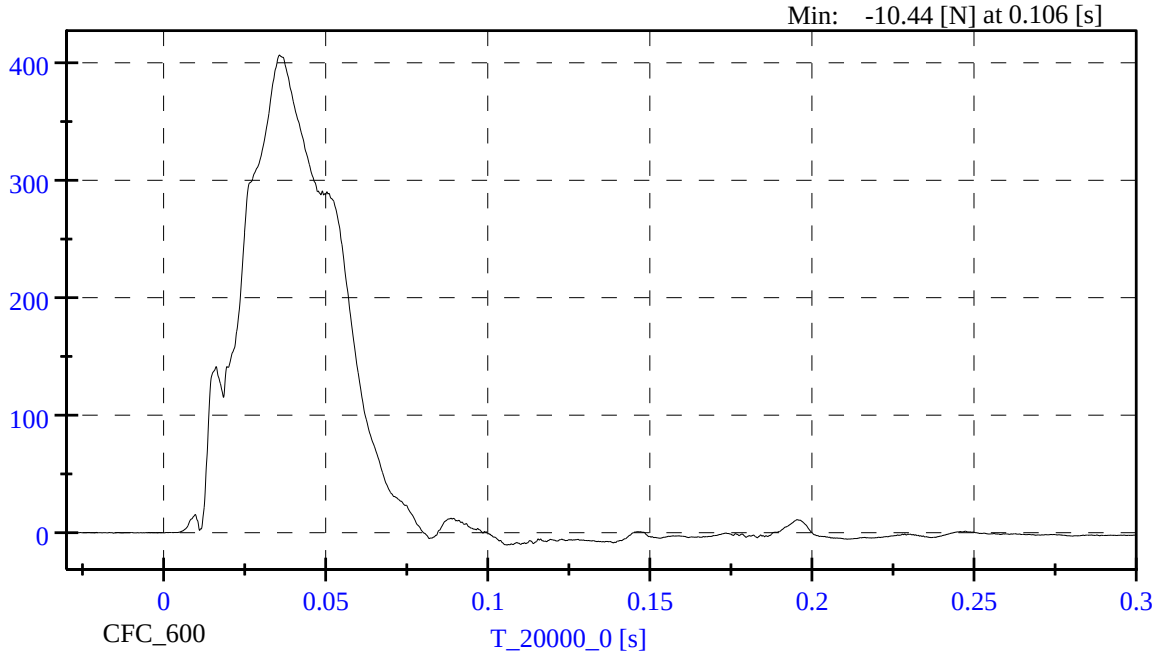
V2P1 Middle Abdomen Fy [N , CFC_600]

Max: 189.10 [N] at 0.037 [s]
Min: -9.97 [N] at 0.012 [s]



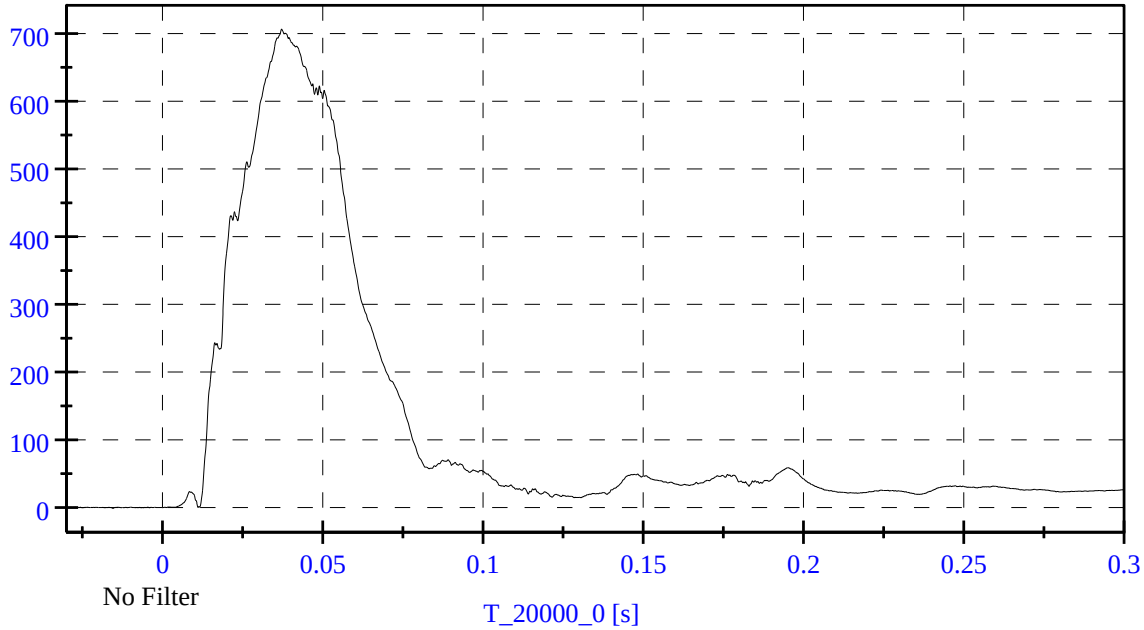
V2P1 Rear Abdomen Fy [N , CFC_600]

Max: 406.55 [N] at 0.036 [s]
Min: -10.44 [N] at 0.106 [s]



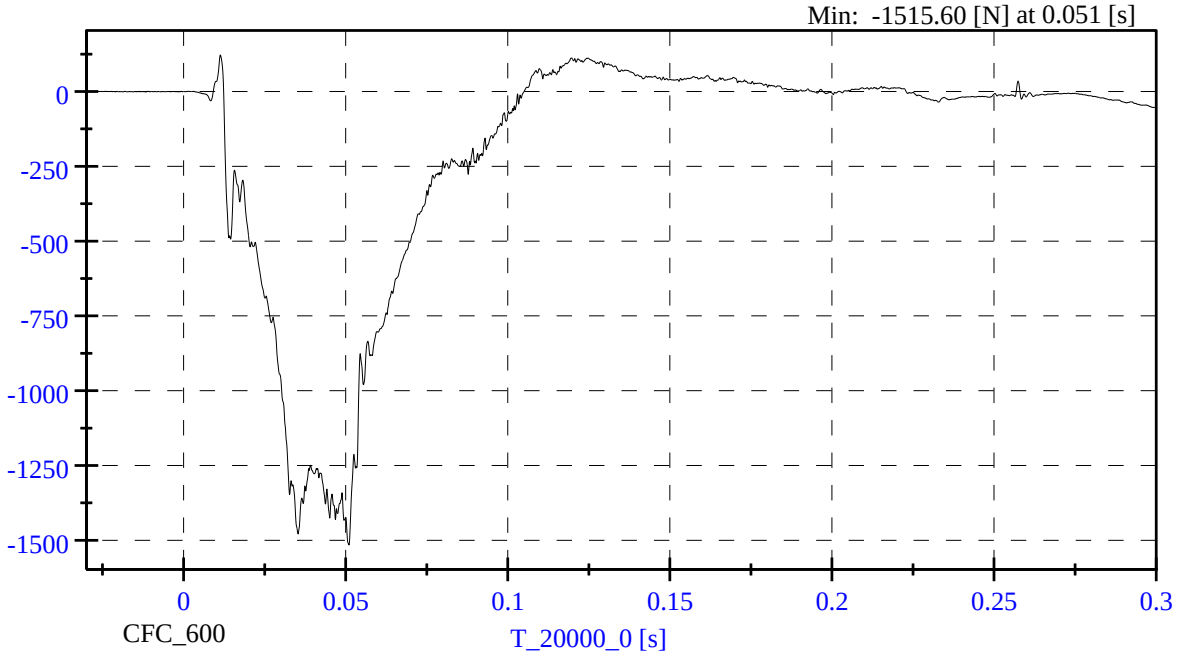
V2P1 Abdominal Summation

Max: 706.37 [N] at 0.037 [s]
Min: -1.23 [N] at -0.015 [s]



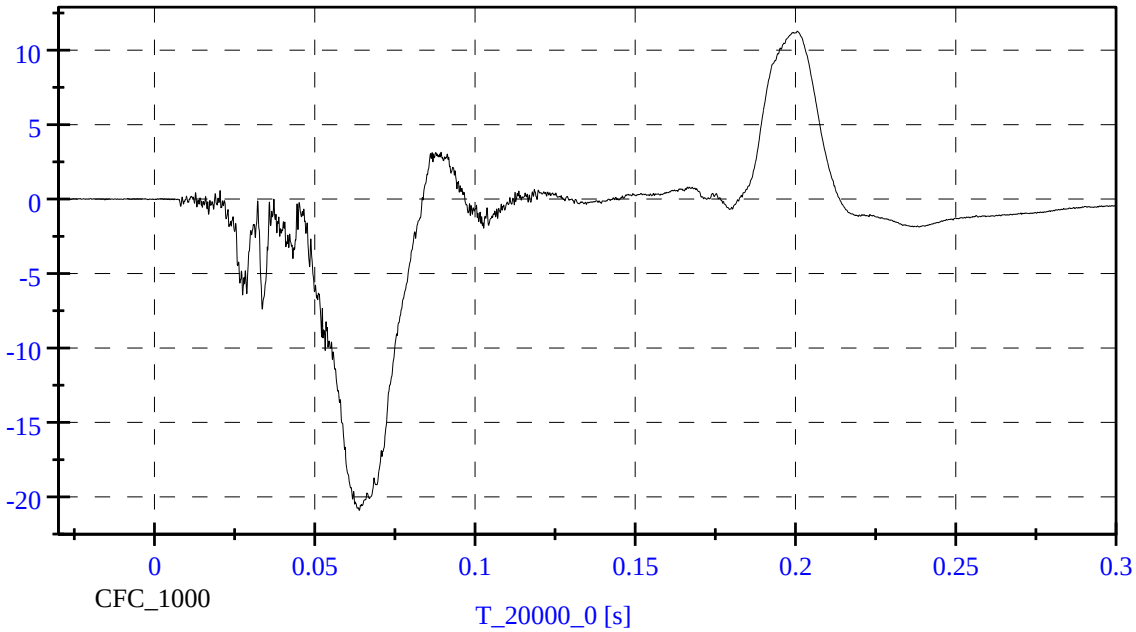
V2P1 Pubic Fy [N , CFC_600]

Max: 121.87 [N] at 0.011 [s]
Min: -1515.60 [N] at 0.051 [s]



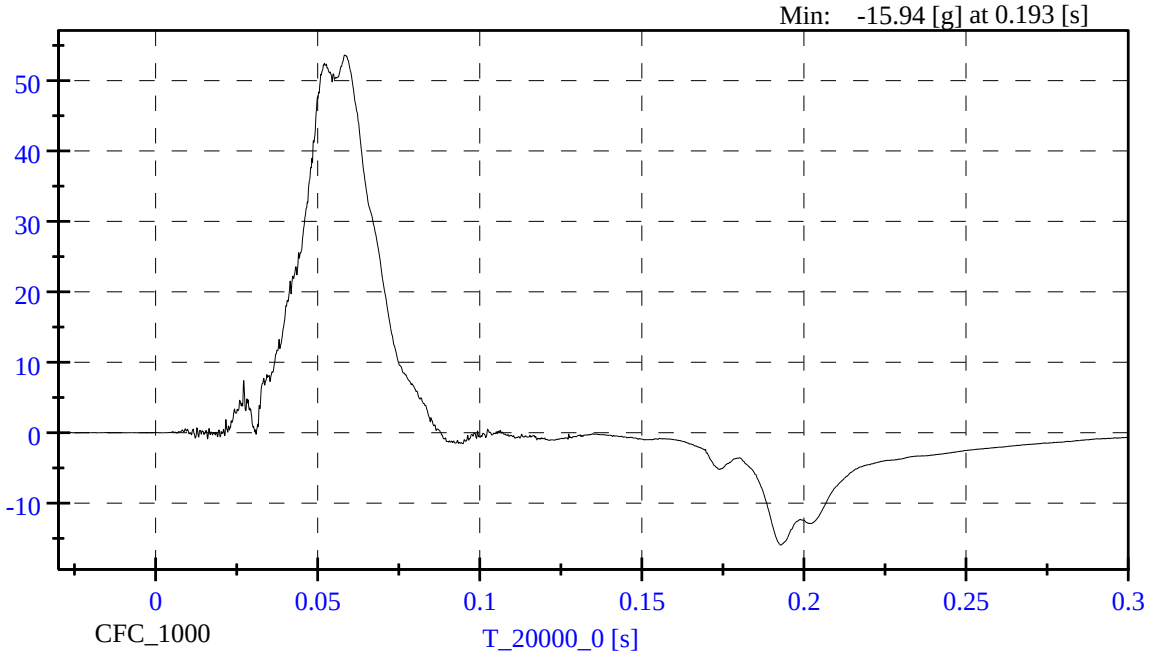
V2P4 Head x [g , CFC_1000]

Max: 11.27 [g] at 0.201 [s]
Min: -20.91 [g] at 0.064 [s]



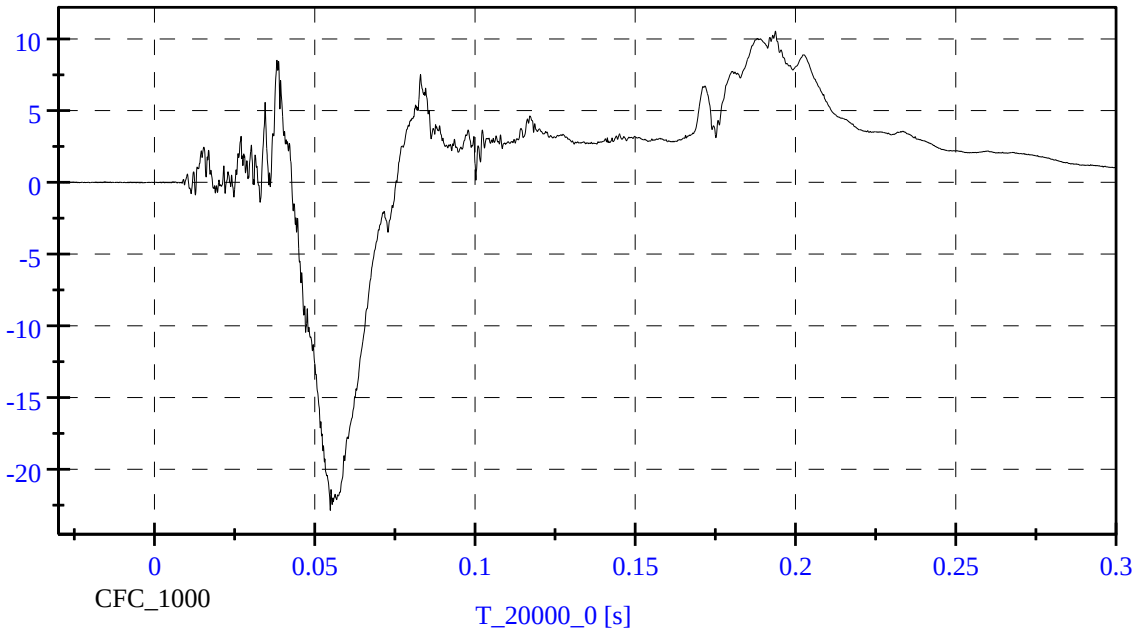
V2P4 Head y [g , CFC_1000]

Max: 53.62 [g] at 0.058 [s]
Min: -15.94 [g] at 0.193 [s]



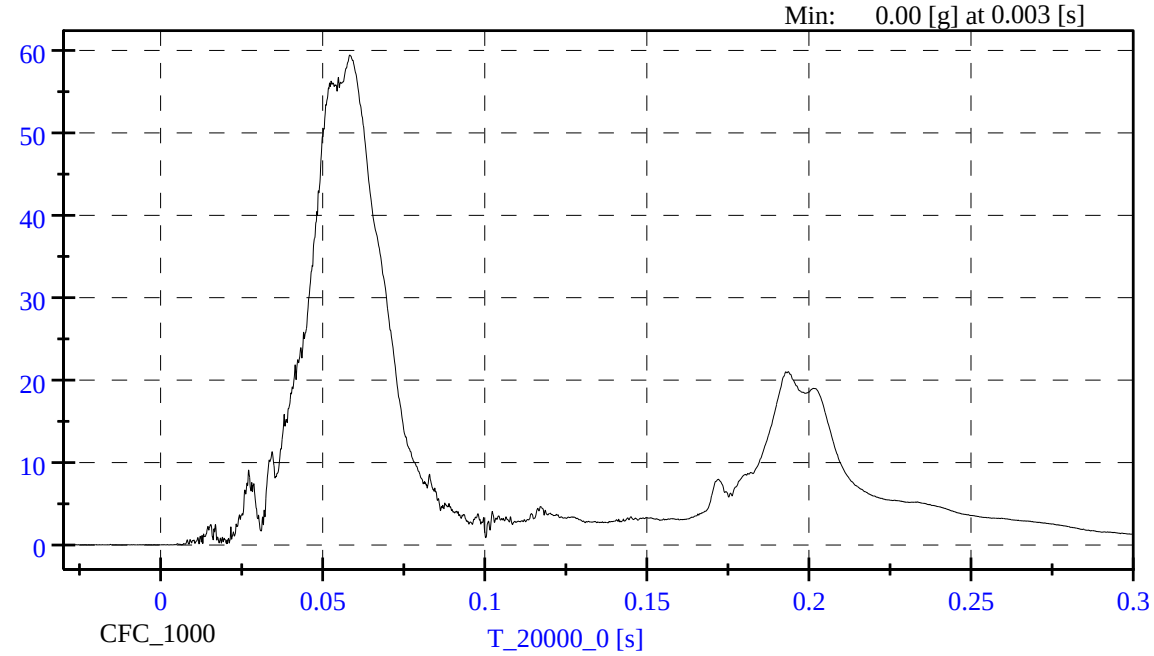
V2P4 Head z [g , CFC_1000]

Max: 10.54 [g] at 0.194 [s]
Min: -22.86 [g] at 0.055 [s]



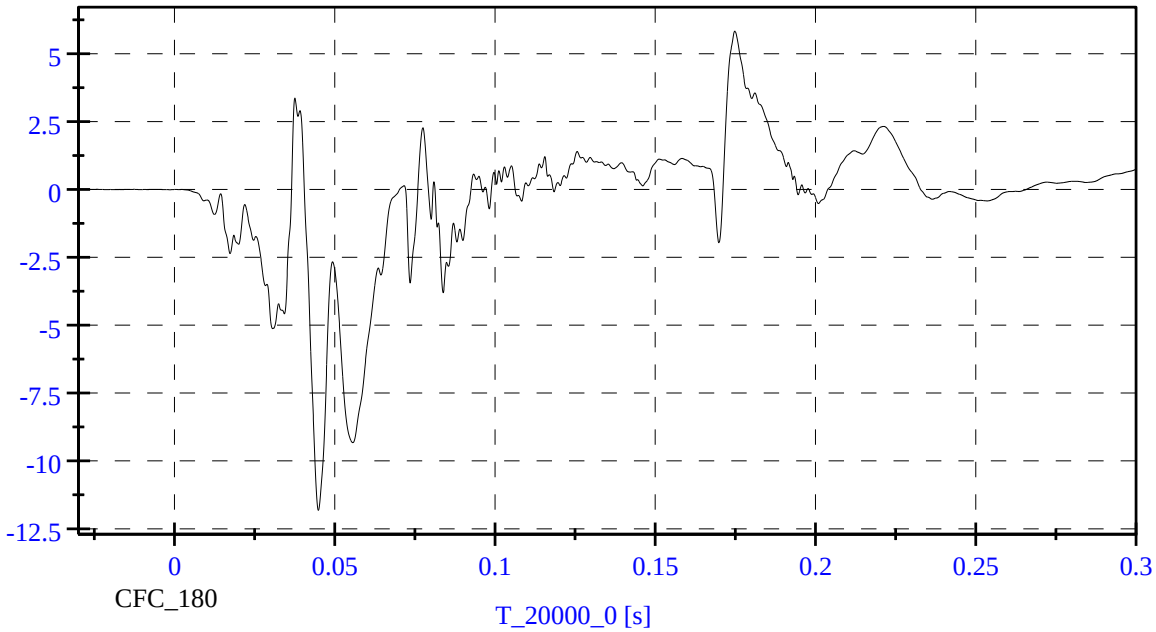
V2P4 Headform Resultant [g, CFC_1000]

Max: 59.44 [g] at 0.058 [s]
Min: 0.00 [g] at 0.003 [s]



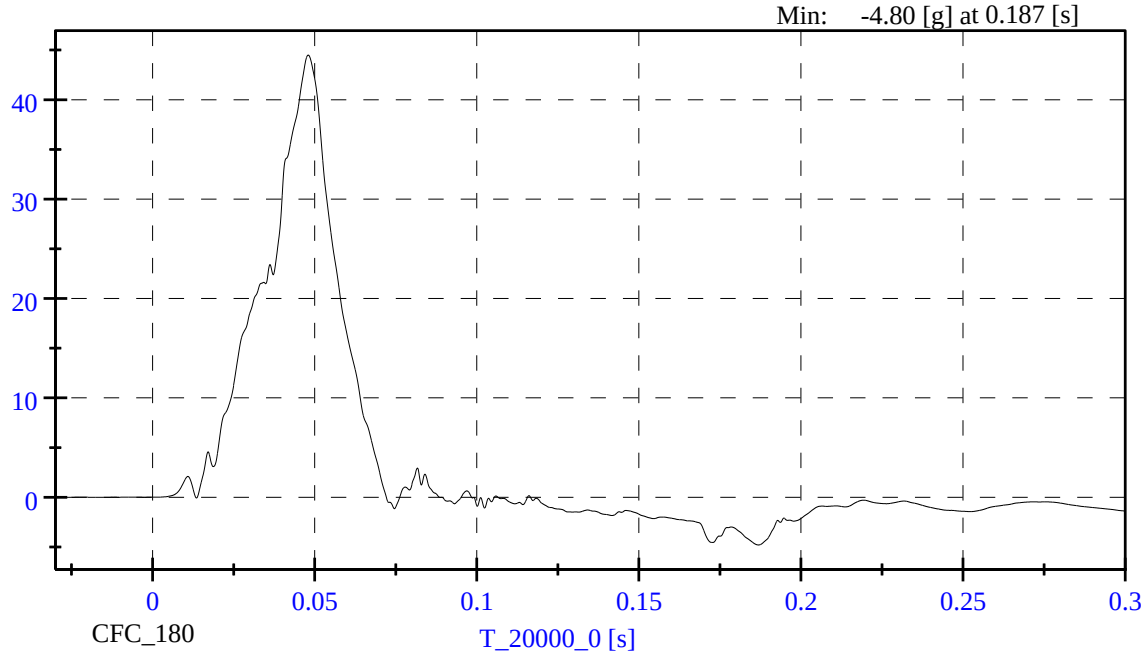
V2P4 Lower Spine T12 x [g , CFC_180]

Max: 5.83 [g] at 0.175 [s]
Min: -11.82 [g] at 0.045 [s]



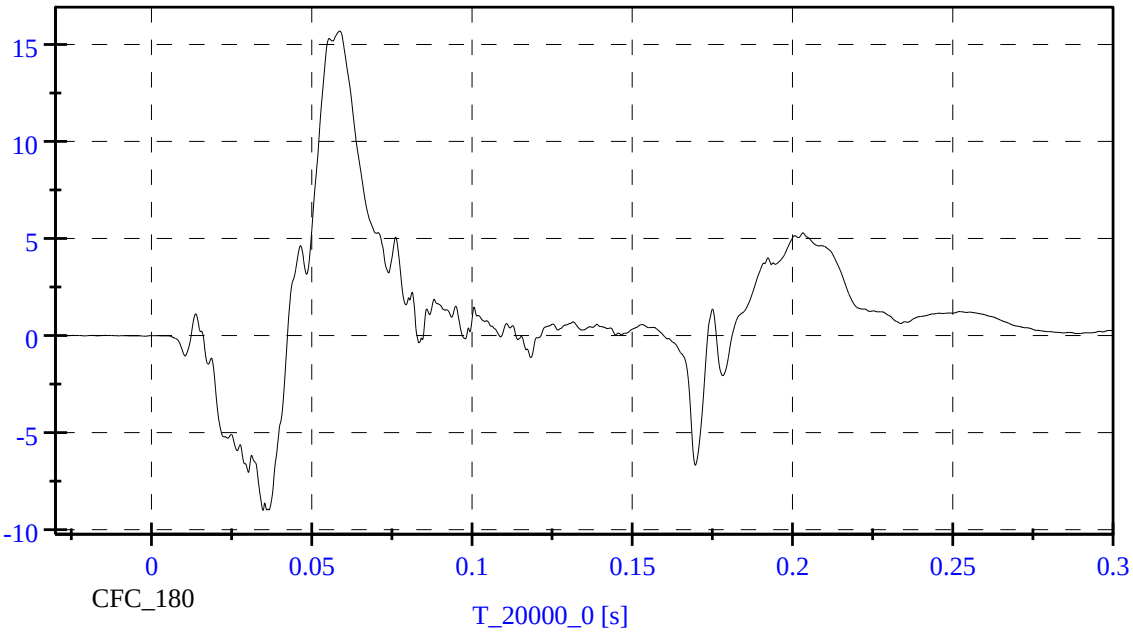
V2P4 Lower Spine T12 y [g , CFC_180]

Max: 44.49 [g] at 0.048 [s]
Min: -4.80 [g] at 0.187 [s]



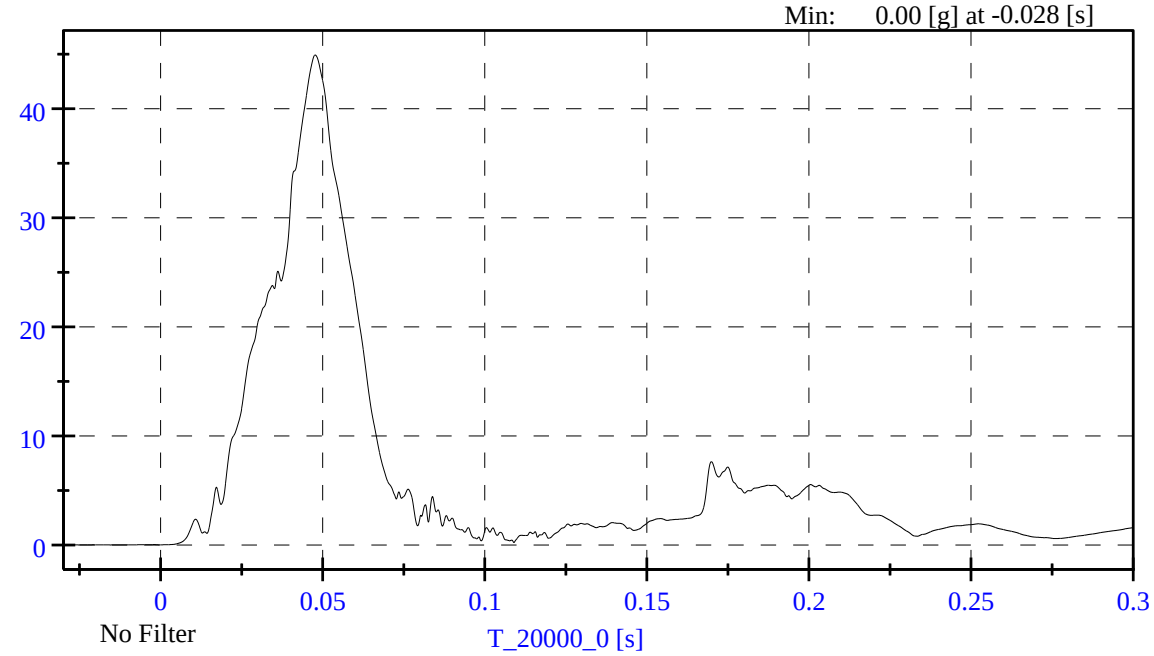
V2P4 Lower Spine T12 z [g , CFC_180]

Max: 15.68 [g] at 0.059 [s]
Min: -9.01 [g] at 0.035 [s]



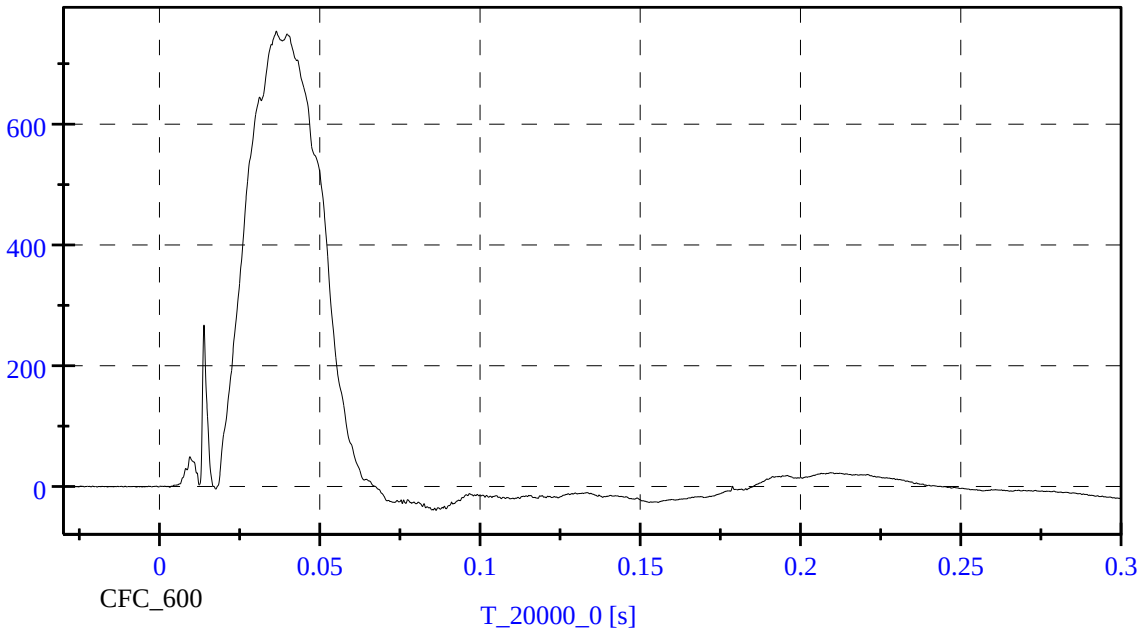
V2P4 Spinal Resultant

Max: 44.92 [g] at 0.048 [s]
Min: 0.00 [g] at -0.028 [s]



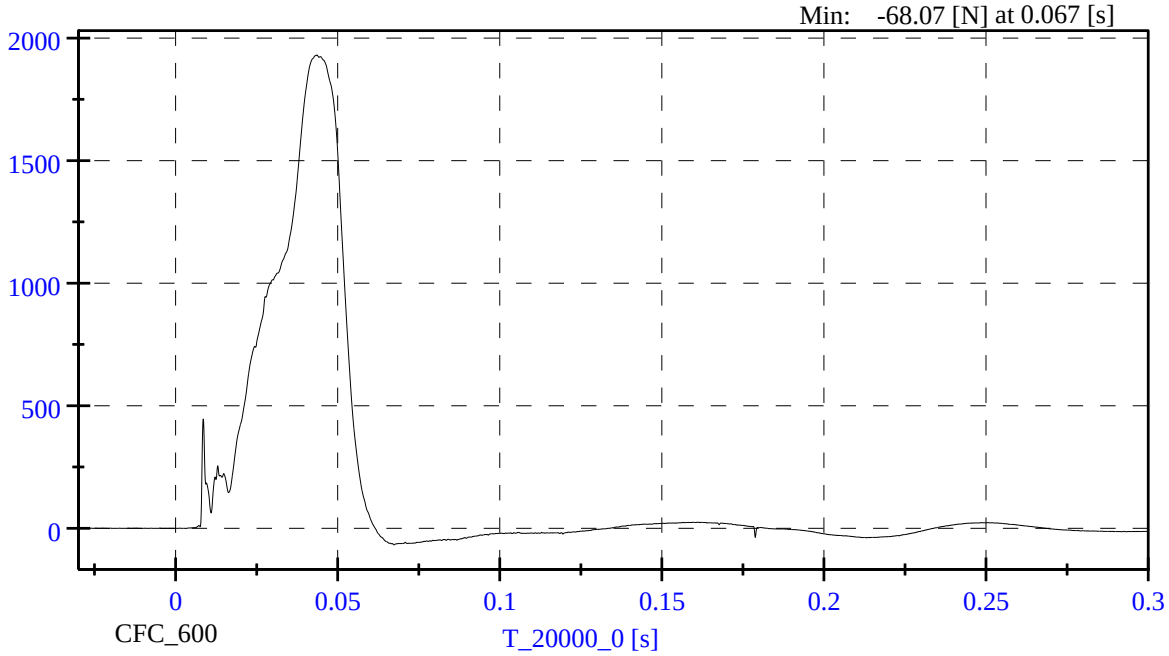
V2P4 Iliac Wing Force [N , CFC_600]

Max: 753.82 [N] at 0.036 [s]
Min: -39.36 [N] at 0.086 [s]



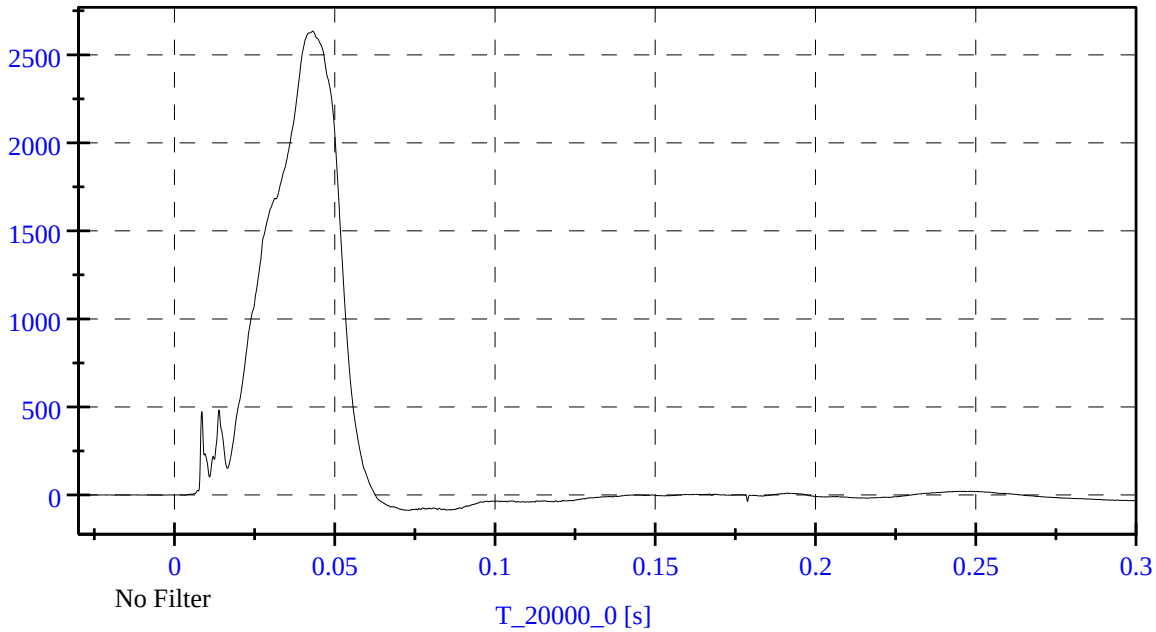
V2P4 Acetabulum Force [N , CFC_600]

Max: 1930.77 [N] at 0.044 [s]
Min: -68.07 [N] at 0.067 [s]



V2P4 Pelvis Summation

Max: 2634.05 [N] at 0.043 [s]
Min: -87.18 [N] at 0.073 [s]



APPENDIX C

DUMMY PERFORMANCE CALIBRATION TEST DATA

CALIBRATION TEST RESULTS

PRE-TEST

EUROSID 2 (ES-2RE) MALE – DRIVER ATD

SERIAL NO: F034

(CONFIGURED FOR LEFT SIDE IMPACT)

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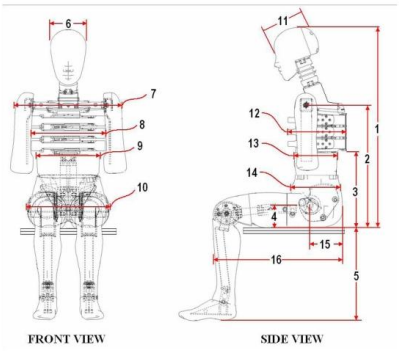
ES-2re External Measurements

NHTSA S/N F034



Dim. No.	Description	Specification (mm)	Result (mm)	Pass/Fail
1	Sitting Height	900-918	913	Pass
2	Seat to Shoulder Joint	558-572	562	Pass
3	Seat to Lower Face of Thoracic Spine Box	346-356	355	Pass
4	Seat to Hip Joint (center of bolt)	97-103	101	Pass
5	Sole to Seat, Sitting	433-451	443	Pass
6	Head Width	152-158	155	Pass
7	Shoulder/Arm Width	461-479	465	Pass
8	Thorax Width	322-332	327	Pass
9	Abdomen Width	273-287	286	Pass
10	Pelvis Lap Width	359-373	372	Pass
11	Head Depth	196-206	201	Pass
12	Thorax Depth	262-272	269	Pass
13	Abdomen Depth	194-204	202	Pass
14	Pelvis Depth	235-245	238	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150-160	156	Pass
16	Back of Buttocks to Front Knee	597-615	607	Pass

Technician: AR Date: 6/13/2012

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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/21/2012**
Test Number:	**1**	Test Time:	**1:45:12 PM**

Component Part Number	Component Serial Number
455-1007	**1916409**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**49**	%RH	P
Resultant Acceleration	125	--	155	**130**	g	P
Oscillation	0.0	--	15.0	**2.3**	%	P
Fore-Aft Acceleration	-15.00	--	15.00	**4.08**	g	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **1:45:12 PM** Test Date: **5/21/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P58737**	**5/17/2012**
Endevco	**7264-2000**	**P52022**	**5/17/2012**
Endevco	**7264-2000**	**P52040**	**5/17/2012**

Test Time: **1:45:12 PM** Test Date: **5/21/2012**

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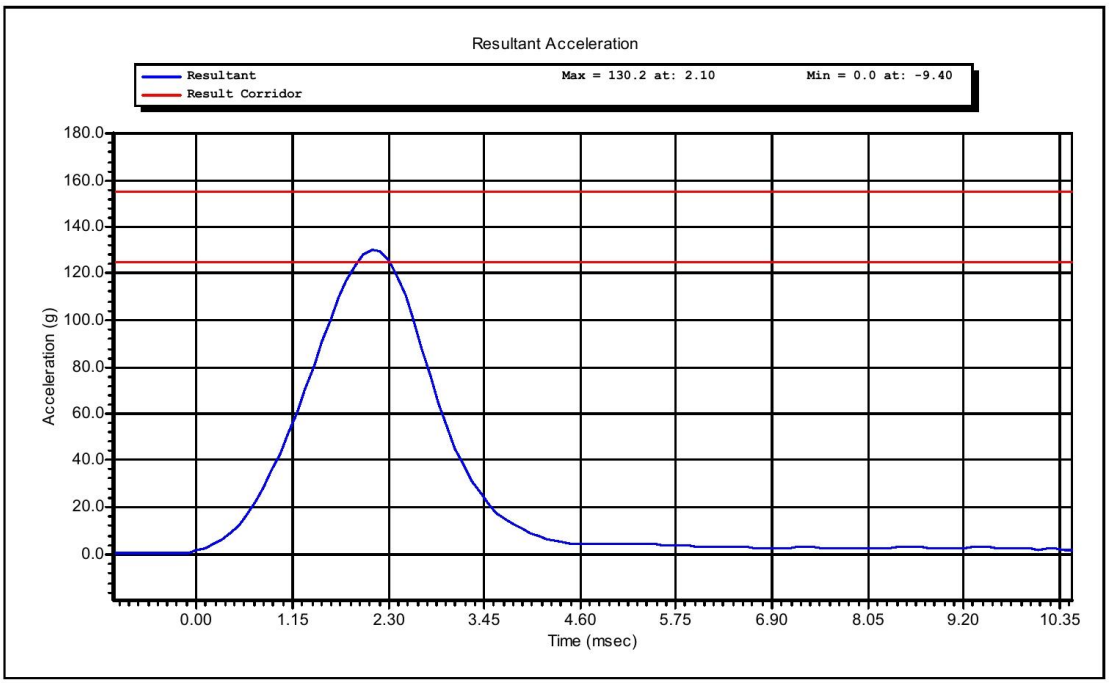
Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/21/2012**
Test Number:	**1**	Test Time:	**1:45:12 PM**



Test Time: **1:45:12 PM** Test Date: **5/21/2012**

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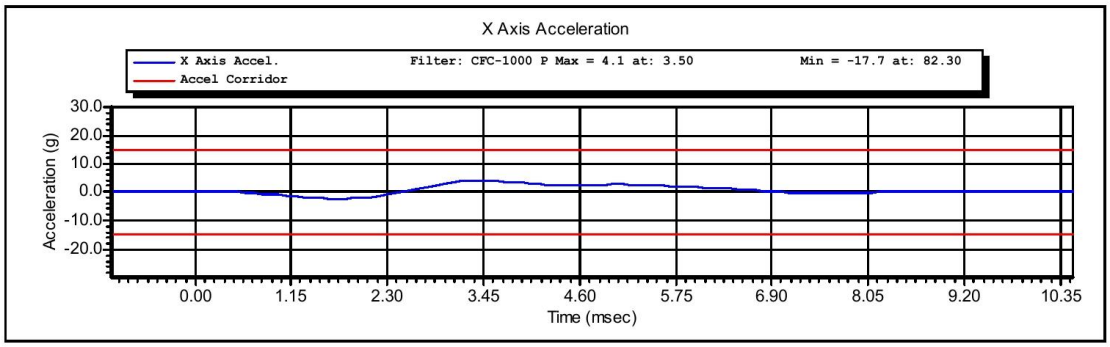

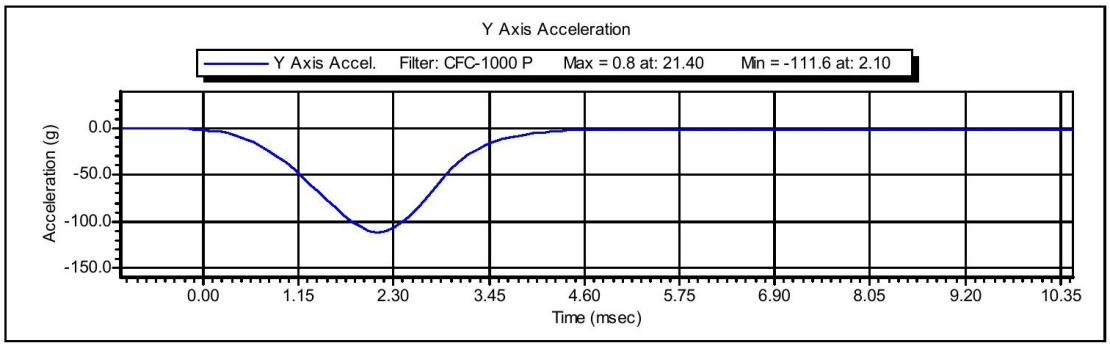

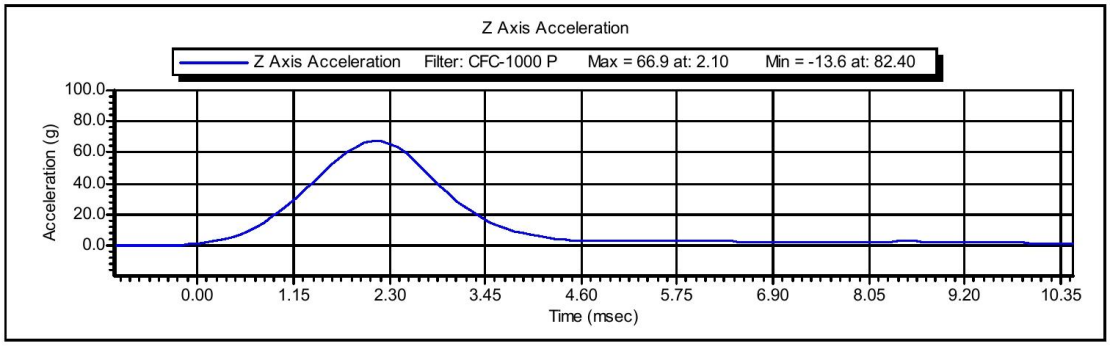

Test Time: **1:45:12 PM** Test Date: **5/21/2012**

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VERIFICATION REPORT

Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/31/2012**
Test Number:	**1**	Test Time:	**9:12:40 AM**

Component Part Number	Component Serial Number

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.2**	deg C	P
Humidity	10	--	70	**47**	%RH	P
Velocity	3.30	--	3.50	**3.48**	m/s	P
Maximum Neck Flexion Angle	49.0	--	59.0	**51.4**	degrees	P
Time At Maximum Neck Flexion	54.0	--	66.0	**62.0**	ms	P
Decay to Zero Degrees	53.0	--	88.0	**60.0**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **9:12:40 AM** Test Date: **5/31/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C15016**	**2/8/2012**
DentonATD	**7000428**	**094**	**5/30/2012**
DentonATD	**7000428**	**095**	**5/30/2012**
DentonATD	**7000428**	**093**	**5/30/2012**

Test Time: **9:12:40 AM** Test Date: **5/31/2012**

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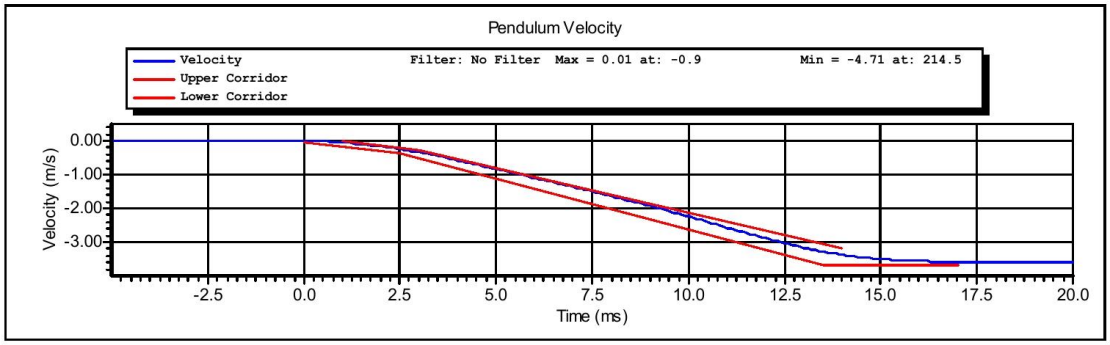
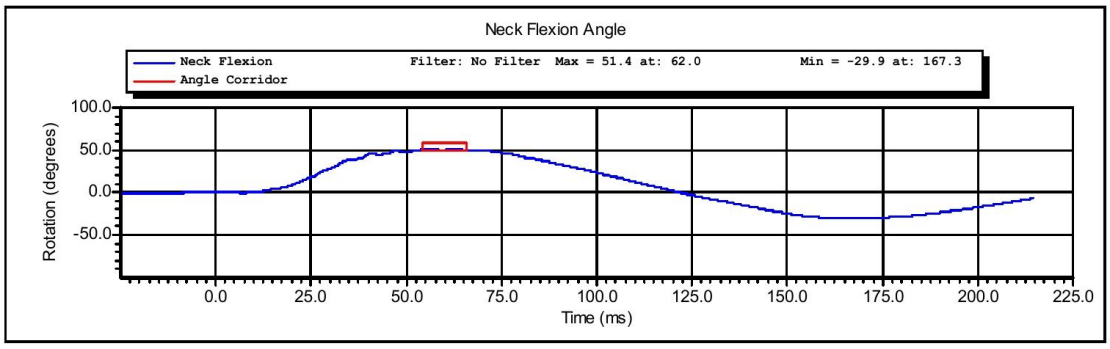
Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/31/2012**
Test Number:	**1**	Test Time:	**9:12:40 AM**





Test Time: **9:12:40 AM** Test Date: **5/31/2012**

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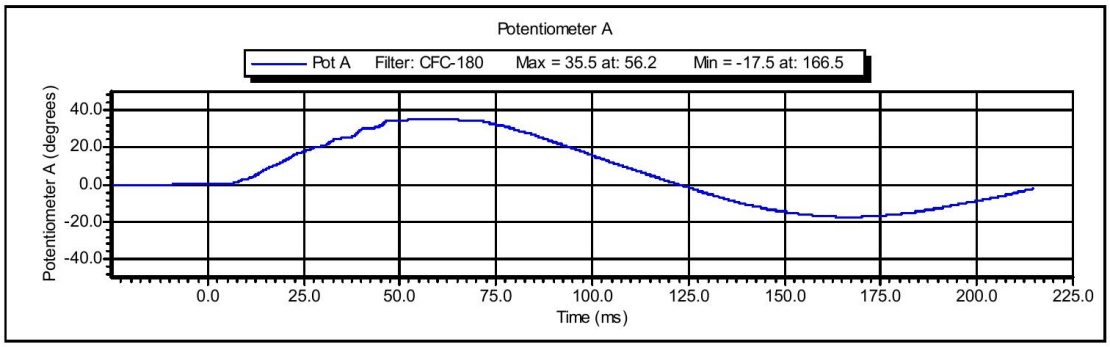

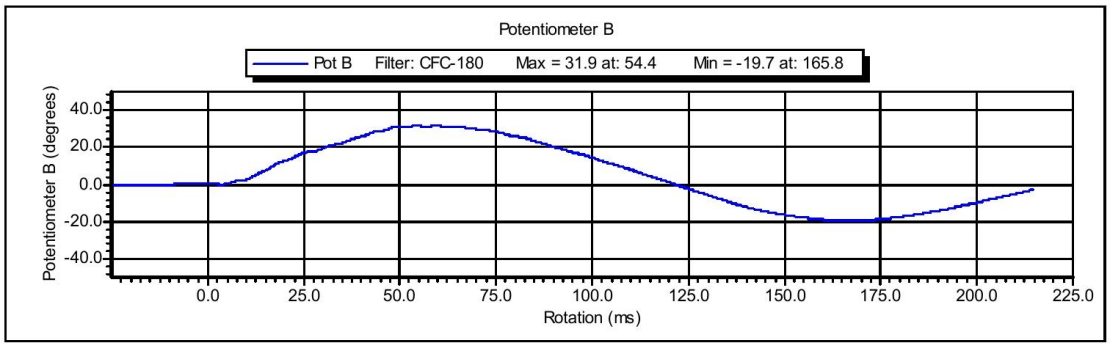

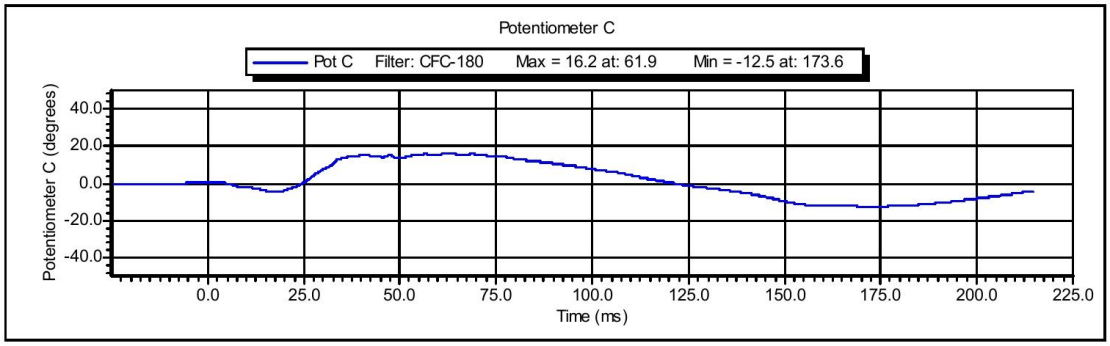

Test Time: **9:12:40 AM** Test Date: **5/31/2012**

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VERIFICATION REPORT

Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/29/2012**
Test Number:	**1**	Test Time:	**3:49:04 PM**

Component Part Number	Component Serial Number
Arm 960715-313	**07018**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.9**	deg C	P
Humidity	10.0	--	70.0	**54.0**	%RH	P
Velocity	4.20	--	4.40	**4.24**	m/s	P
Pendulum Acceleration	-10.50	--	-7.50	**-9.54**	g	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **3:49:04 PM** Test Date: **5/29/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**

Test Time: **3:49:04 PM** Test Date: **5/29/2012**

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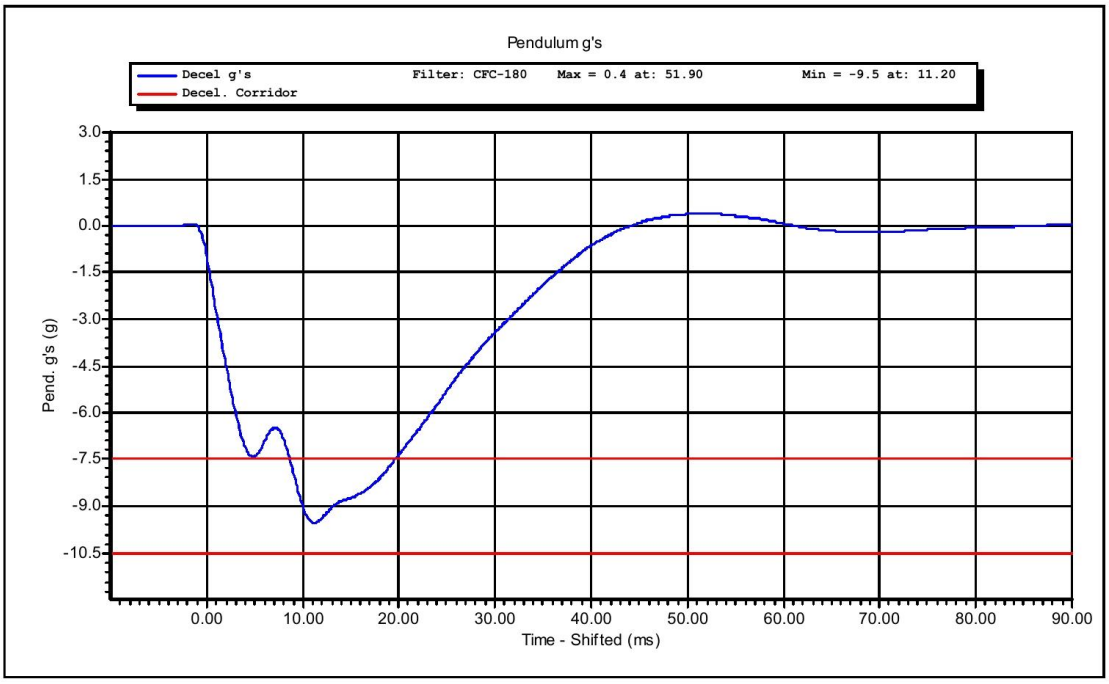
Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/29/2012**
Test Number:	**1**	Test Time:	**3:49:04 PM**



Test Time: **3:49:04 PM** Test Date: **5/29/2012**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Upper 4.0 m/s**	Test Date:	**6/11/2012**
Test Number:	**1**	Test Time:	**9:23:54 AM**

Component Part Number	Component Serial Number
455-3100	**07203**

Comments:

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.8**	deg C	P
Humidity	10.0	--	70.0	**65.0**	%RH	P
Velocity	3.90	--	4.10	**3.95**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-46.48**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **9:23:54 AM** Test Date: **6/11/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-183**	**5/17/2012**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **9:23:54 AM** Test Date: **6/11/2012**

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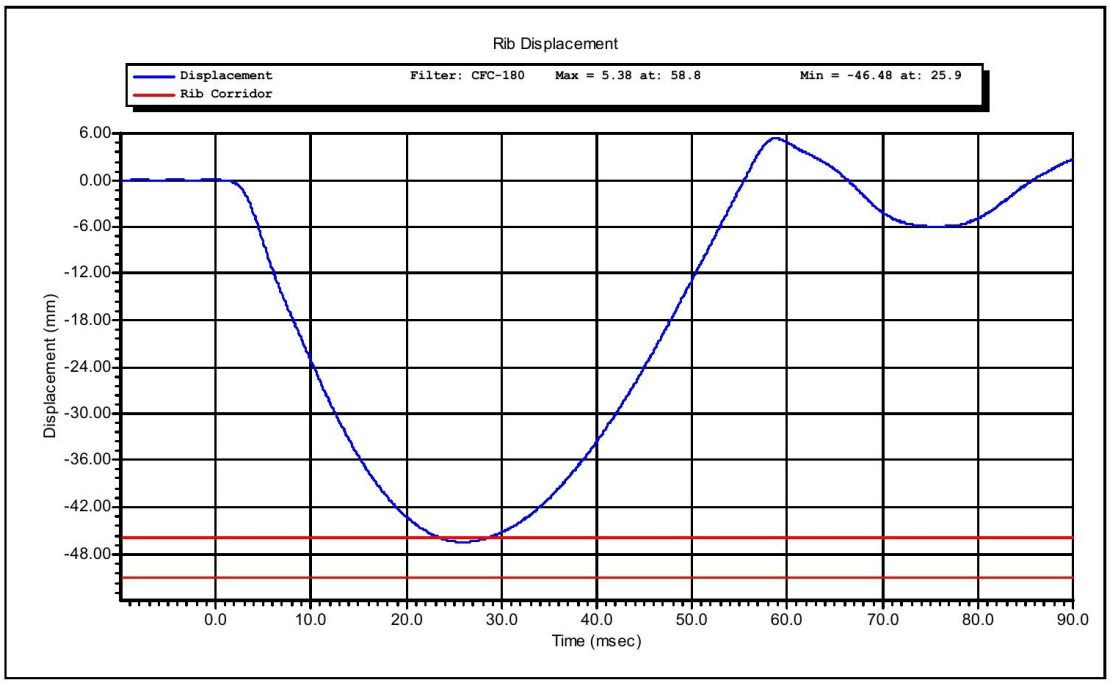
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Upper 4.0 m/s**	Test Date:	**6/11/2012**
Test Number:	**1**	Test Time:	**9:23:54 AM**



Test Time: **9:23:54 AM** Test Date: **6/11/2012**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Upper Rib 3 m/s**	Test Date:	**6/11/2012**
Test Number:	**1**	Test Time:	**9:34:57 AM**

Component Part Number	Component Serial Number
Upper Rib 455-3100	**07203**

Comments:

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.8**	deg C	P
Humidity	10.0	--	70.0	**64.0**	%RH	P
Velocity	2.90	--	3.10	**3.00**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-36.43**	mm	P
Drop Height	454	--	464	**464**	mm	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **9:34:57 AM** Test Date: **6/11/2012**

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REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-183**	**5/17/2012**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **9:34:57 AM** Test Date: **6/11/2012**

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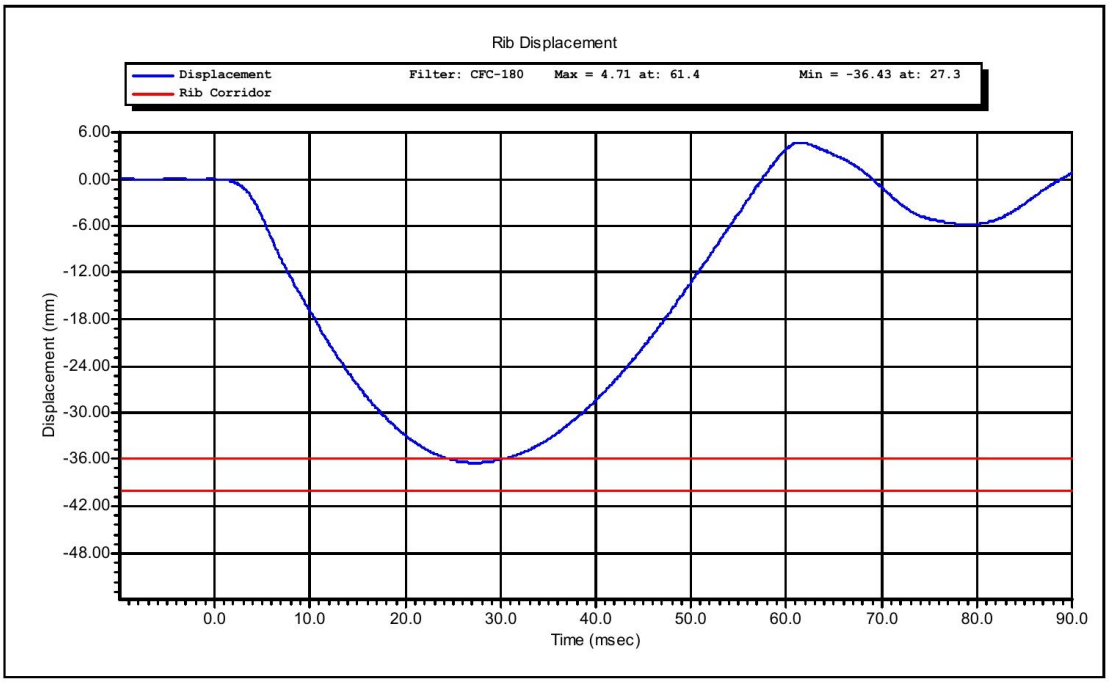
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Upper Rib 3 m/s**	Test Date:	**6/11/2012**
Test Number:	**1**	Test Time:	**9:34:57 AM**



Test Time: **9:34:57 AM** Test Date: **6/11/2012**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Middle 4. m/s**	Test Date:	**6/7/2012**
Test Number:	**1**	Test Time:	**9:33:55 AM**

Component Part Number	Component Serial Number
455-3100	**07205**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.8**	deg C	P
Humidity	10.0	--	70.0	**53.0**	%RH	P
Velocity	3.90	--	4.10	**3.96**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-47.87**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **9:33:55 AM** Test Date: **6/7/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-184**	**8/31/2011**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **9:33:55 AM** Test Date: **6/7/2012**

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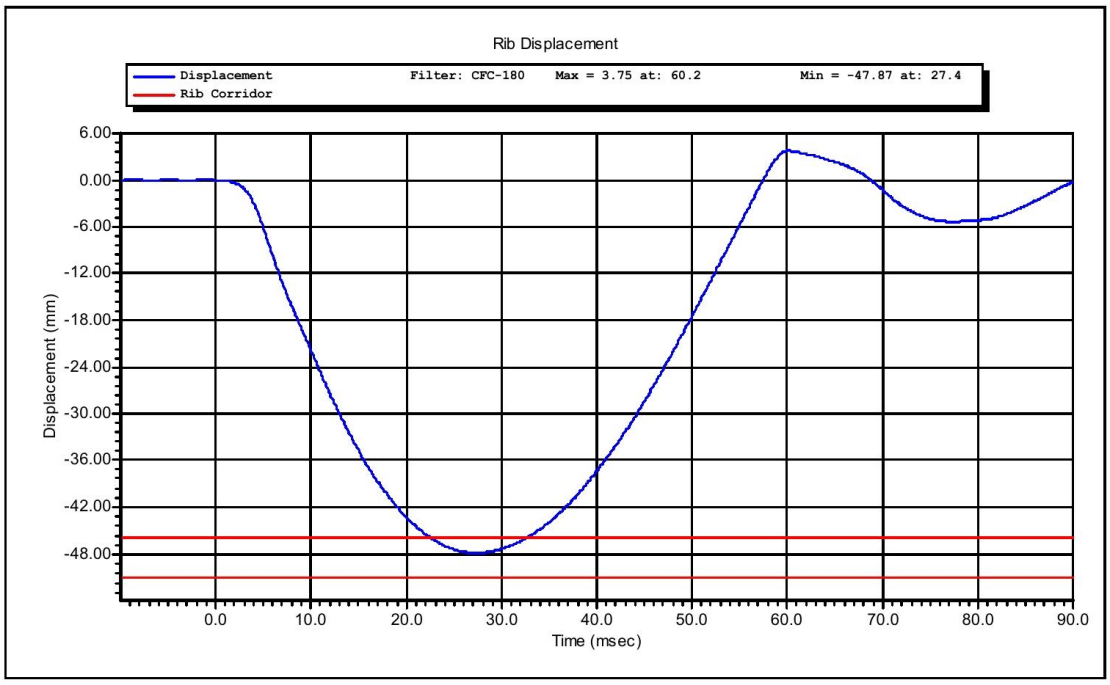
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Middle 4. m/s**	Test Date:	**6/7/2012**
Test Number:	**1**	Test Time:	**9:33:55 AM**



Test Time: **9:33:55 AM** Test Date: **6/7/2012**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Middle 3m/s**	Test Date:	**6/7/2012**
Test Number:	**1**	Test Time:	**9:39:57 AM**

Component Part Number	Component Serial Number
455-3100	**07205**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.8**	deg C	P
Humidity	10.0	--	70.0	**53.0**	%RH	P
Velocity	2.90	--	3.10	**2.97**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.14**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **9:39:57 AM** Test Date: **6/7/2012**

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Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-183**	**8/31/2011**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **9:39:57 AM** Test Date: **6/7/2012**

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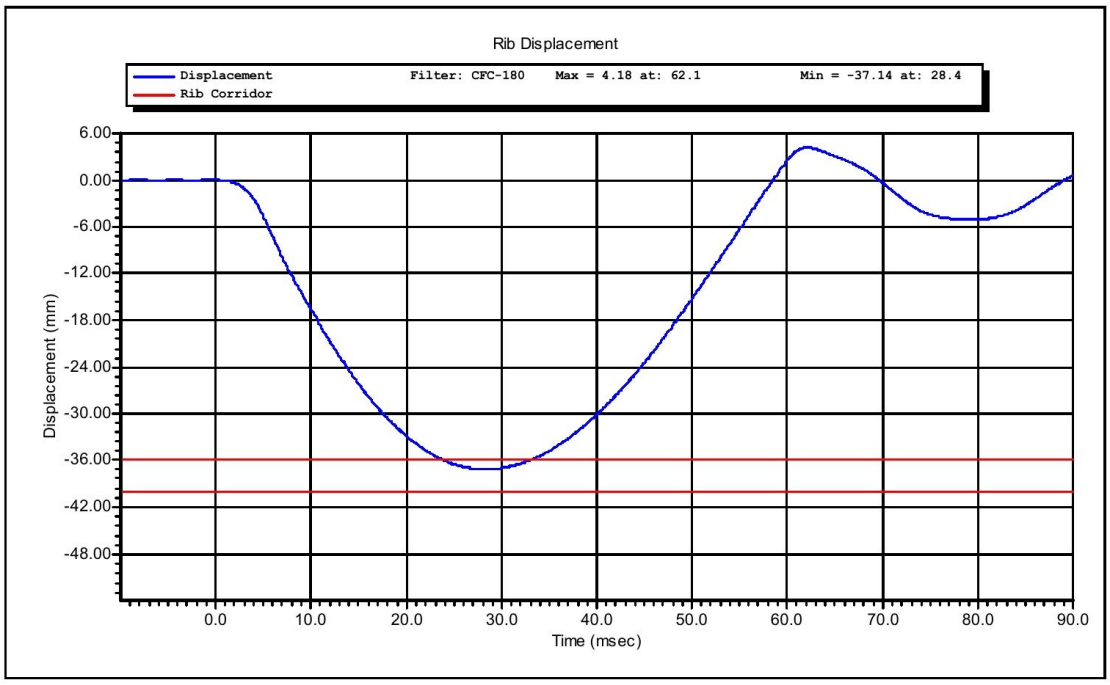
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Middle 3m/s**	Test Date:	**6/7/2012**
Test Number:	**1**	Test Time:	**9:39:57 AM**



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Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Lower 4.0 m/s**	Test Date:	**6/7/2012**
Test Number:	**1**	Test Time:	**8:21:33 AM**

Component Part Number	Component Serial Number
455-3100	**07209**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.3**	deg C	P
Humidity	10.0	--	70.0	**54.0**	%RH	P
Velocity	3.90	--	4.10	**3.98**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-50.09**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **8:21:33 AM** Test Date: **6/7/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-182**	**8/31/2011**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **8:21:33 AM** Test Date: **6/7/2012**

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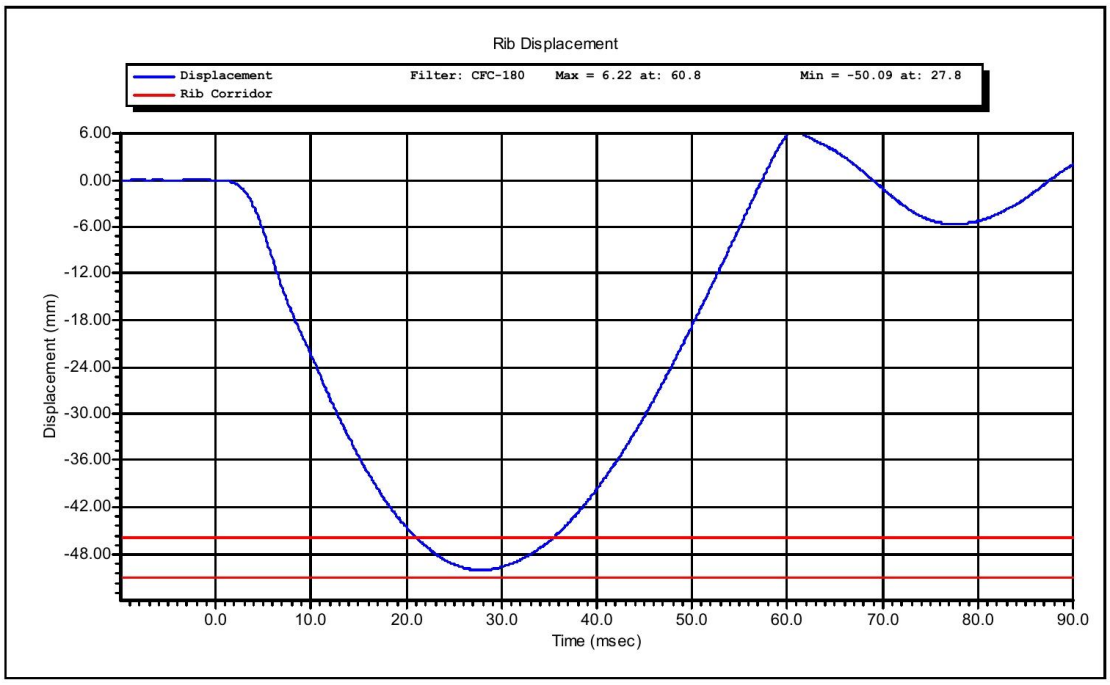
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Lower 4.0 m/s**	Test Date:	**6/7/2012**
Test Number:	**1**	Test Time:	**8:21:33 AM**



Test Time: **8:21:33 AM** Test Date: **6/7/2012**

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Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:			
Test ID:		Test Date:	**6/7/2012**
Test Number:	**1**	Test Time:	**8:36:08 AM**

Component Part Number	Component Serial Number
455-3100	**07209**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.8**	deg C	P
Humidity	10.0	--	70.0	**54.0**	%RH	P
Velocity	2.90	--	3.10	**2.98**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-38.75**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **8:36:08 AM** Test Date: **6/7/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-182**	**8/31/2011**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **8:36:08 AM** Test Date: **6/7/2012**

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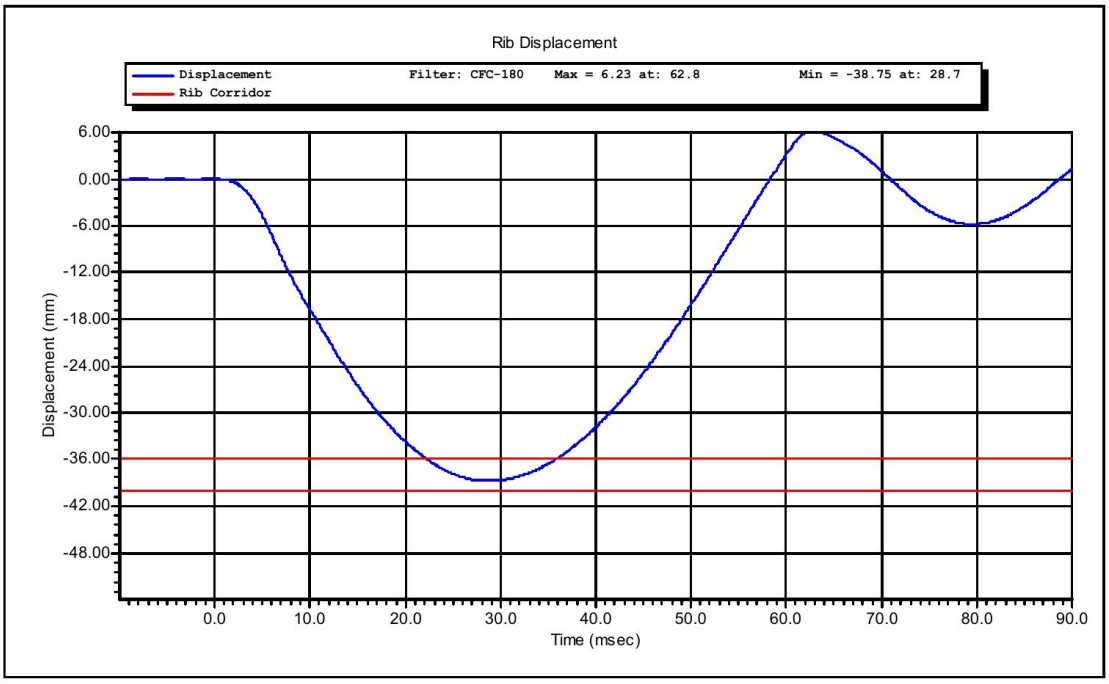
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:			
Test ID:		Test Date:	**6/7/2012**
Test Number:	**1**	Test Time:	**8:36:08 AM**



Test Time: **8:36:08 AM** Test Date: **6/7/2012**

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VERIFICATION REPORT

Test Name:	**Thorax Impact**	Revision:	**8/15/2008**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**6/12/2012**
Test Number:	**1**	Test Time:	**11:50:07 AM**

Component Part Number	Component Serial Number
Upper Rib - 175-4002	**07203**
Middle Rib - 175-4002	**07205**
Lower Rib - 175-4002	**07209**

Comments:

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10.0	--	70.0	**60.0**	%RH	P
Velocity	5.40	--	5.60	**5.48**	m/s	P
Upper Rib Displacement	34.0	--	41.0	**38.3**	mm	P
Middle Rib Displacement	37.0	--	45.0	**41.4**	mm	P
Lower Rib Displacement	37.0	--	44.0	**39.6**	mm	P
Impactor Force	5100	--	6200	**5543**	N	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **11:50:07 AM** Test Date: **6/12/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
Honeywell	**MLT-38000**	**DS-183**	**5/17/2012**
Honeywell	**MLT-38000**	**DS-184**	**5/17/2012**
Honeywell	**MLT-38000**	**DS-182**	**5/17/2012**

Test Time: **11:50:07 AM** Test Date: **6/12/2012**

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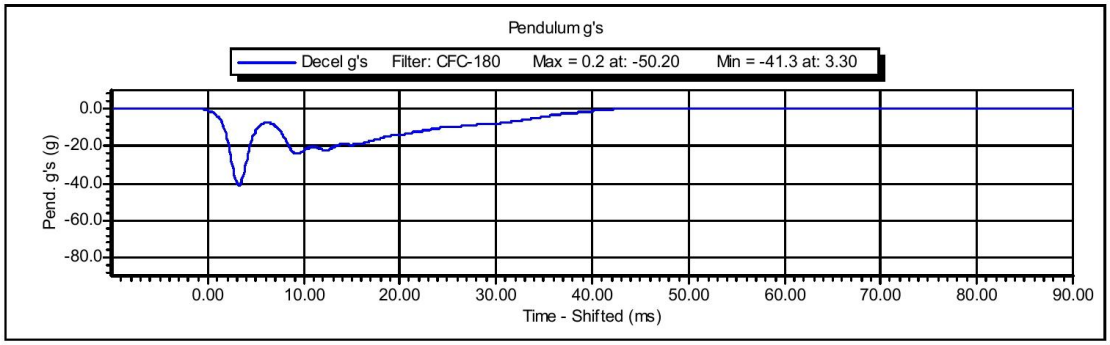
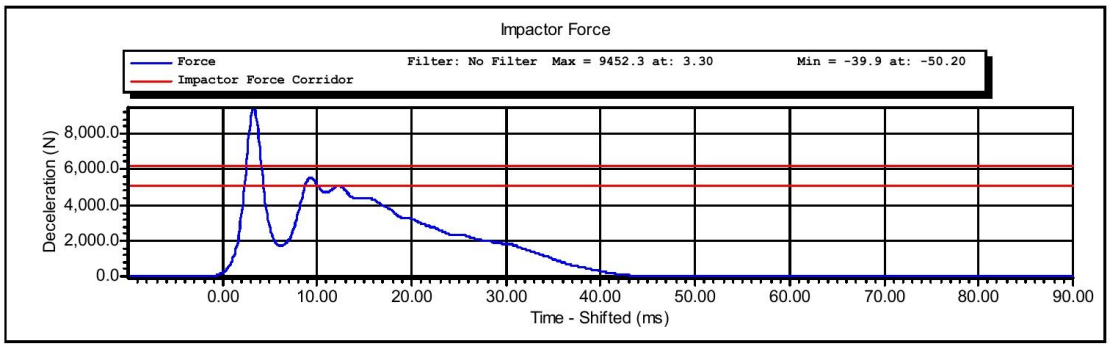
Test Name:	**Thorax Impact**	Revision:	**8/15/2008**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**6/12/2012**
Test Number:	**1**	Test Time:	**11:50:07 AM**





Test Time: **11:50:07 AM** Test Date: **6/12/2012**

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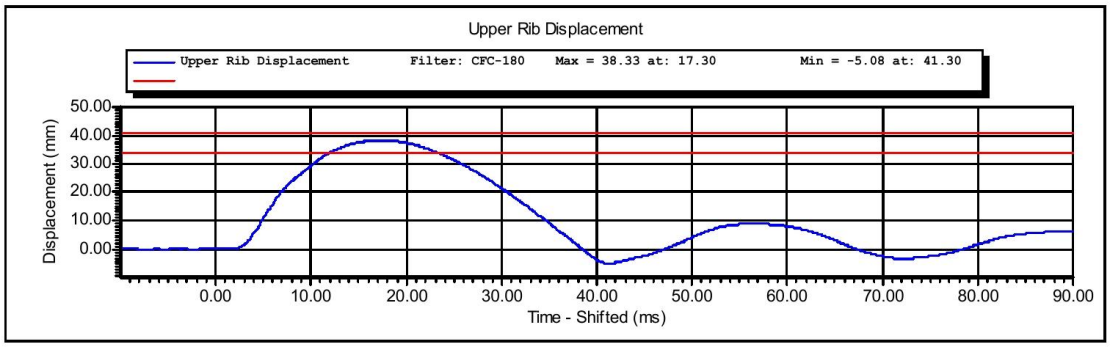

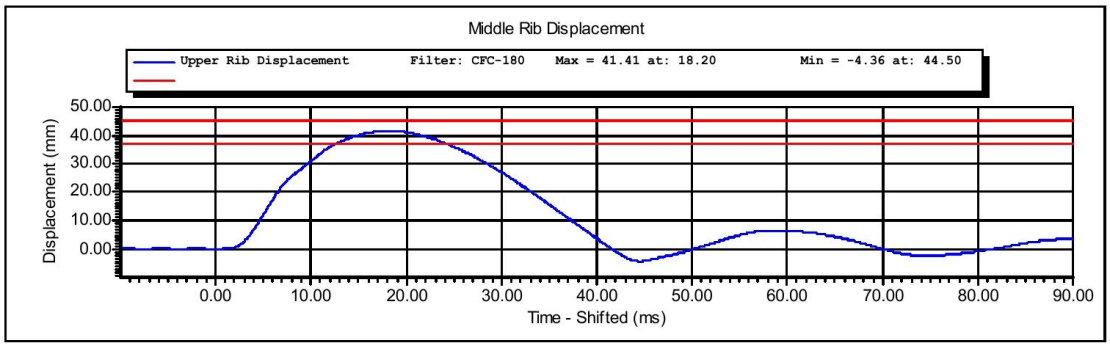

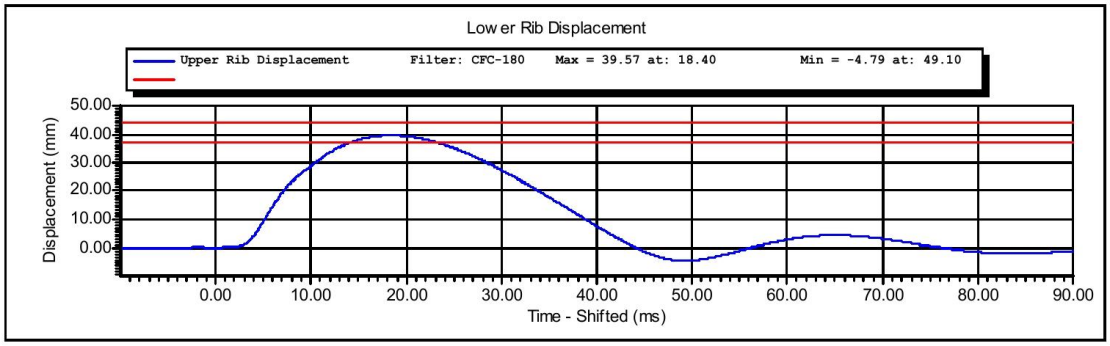

Test Time: **11:50:07 AM** Test Date: **6/12/2012**

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VERIFICATION REPORT

Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/29/2012**
Test Number:	**1**	Test Time:	**3:16:04 PM**

Component Part Number	Component Serial Number
Abdominal Insert 455-4001	**04/83**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.9**	deg C	P
Humidity	10	--	70	**54**	%RH	P
Velocity	3.90	--	4.10	**4.07**	m/s	P
Peak Abdominal Force	-2.70	--	-2.20	**-2.62**	kN	P
Time At Peak Abdominal Force	10.0	--	12.3	**11.5**	ms	P
Maximum Pendulum Force	-4.80	--	-4.00	**-4.61**	kN	P
Time at Peak Pendumlum Force	10.6	--	13.0	**12.1**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **3:16:04 PM** Test Date: **5/29/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
Denton	**2631**	**LC-1512**	**5/21/2012**
Denton	**2631**	**LC-1526**	**5/21/2012**
Denton	**2631**	**LC-1516**	**5/21/2012**

Test Time: **3:16:04 PM** Test Date: **5/29/2012**

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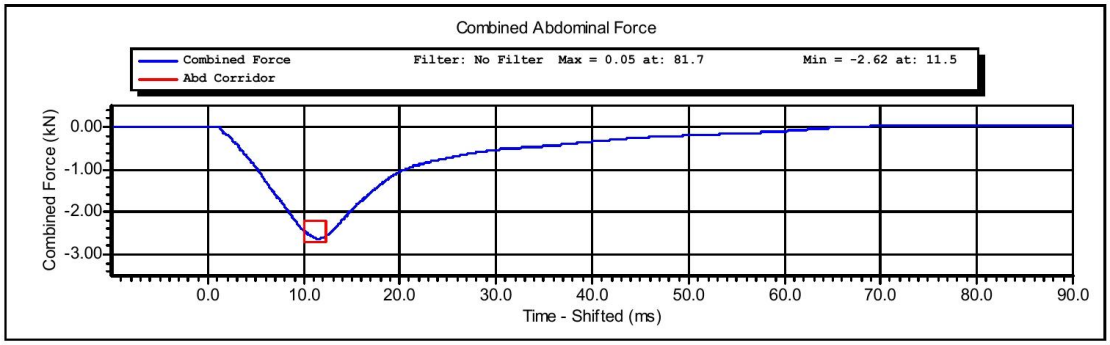
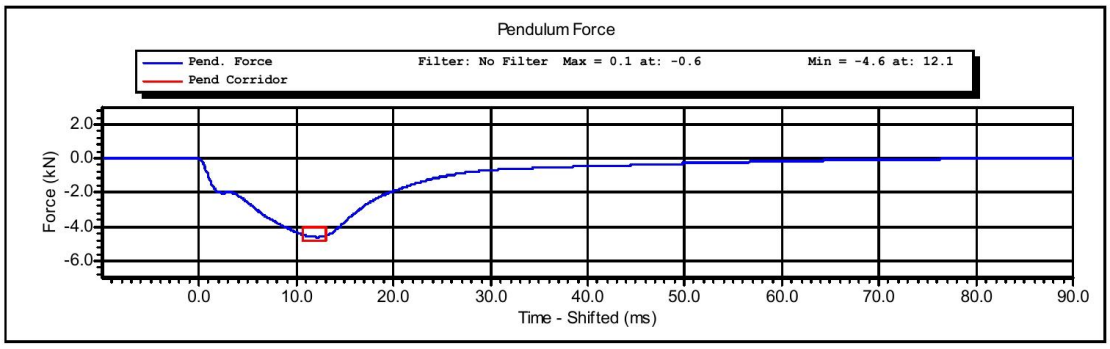
Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/29/2012**
Test Number:	**1**	Test Time:	**3:16:04 PM**





Test Time: **3:16:04 PM** Test Date: **5/29/2012**

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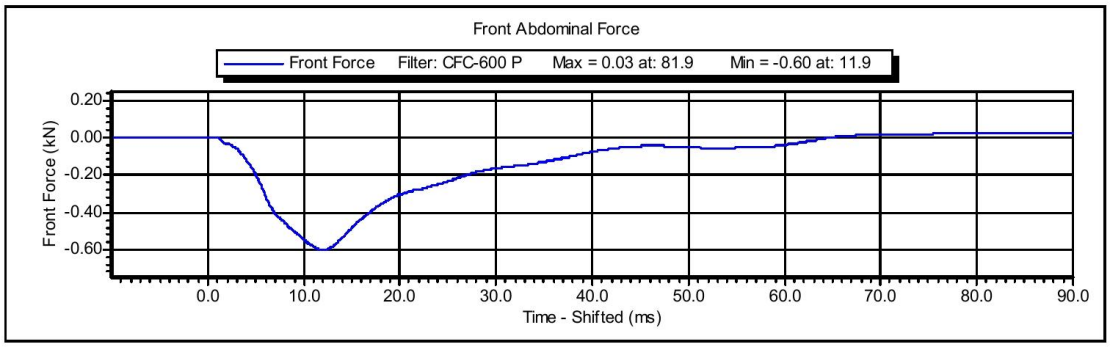

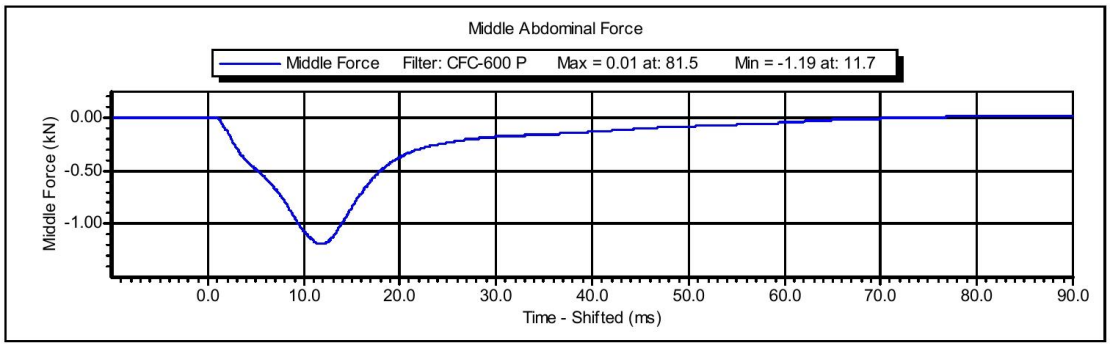

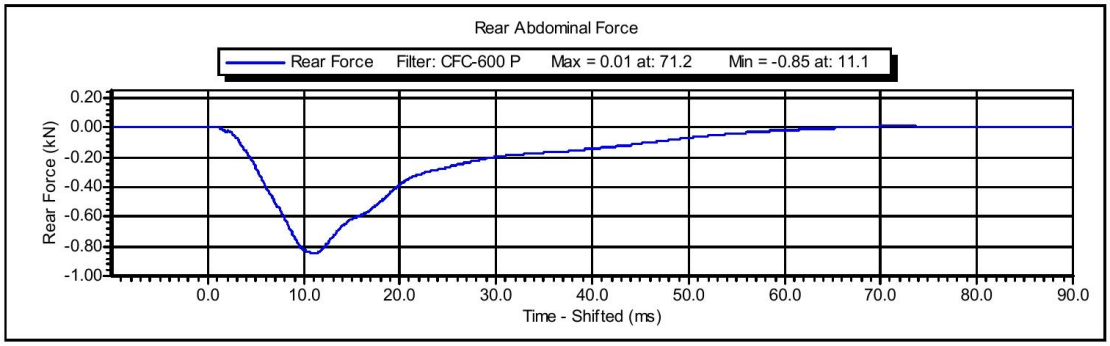

Test Time: **3:16:04 PM** Test Date: **5/29/2012**

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VERIFICATION REPORT

Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**6/11/2012**
Test Number:	**7**	Test Time:	**3:45:31 PM**

Component Part Number	Component Serial Number
175-5501	**DI8371**

Comments:
35 in-lbf torque

7x7 slight squish

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**52**	%RH	P
Velocity	5.95	--	6.15	**6.15**	m/s	P
Maximum Headform Flexion Angle	45.0	--	55.0	**46.8**	degrees	P
Time at Maximum Headform Flexion Angle	39.0	--	53.0	**46.7**	ms	P
Decay to Zero Degrees	37.0	--	57.0	**37.3**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **3:45:31 PM** Test Date: **6/11/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C15016**	**2/8/2012**
DentonATD	**7000428**	**094**	**5/30/2012**
DentonATD	**7000428**	**095**	**5/30/2012**
DentonATD	**7000428**	**093**	**5/30/2012**

Test Time: **3:45:31 PM** Test Date: **6/11/2012**

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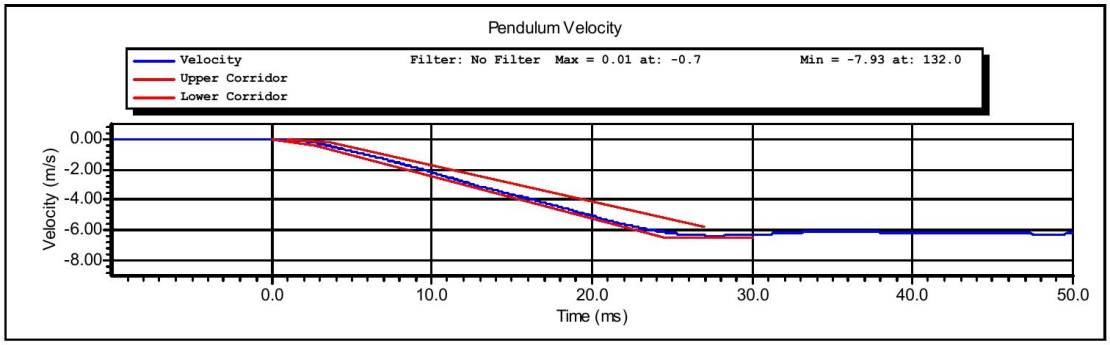
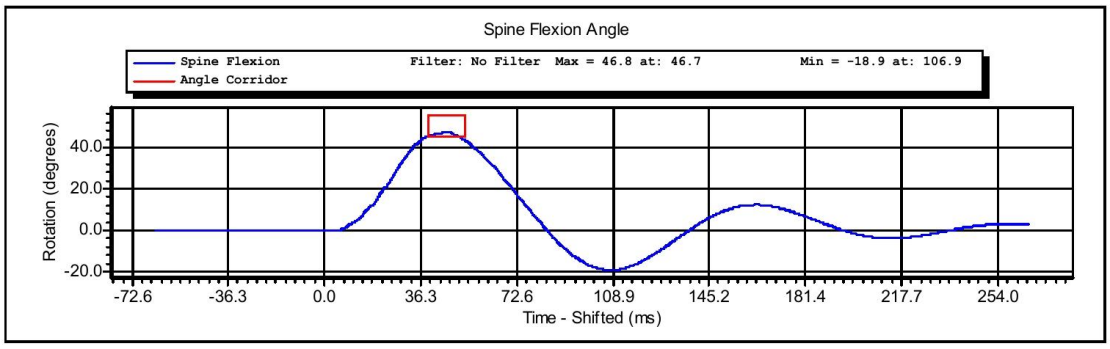
Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**6/11/2012**
Test Number:	**7**	Test Time:	**3:45:31 PM**





Test Time: **3:45:31 PM** Test Date: **6/11/2012**

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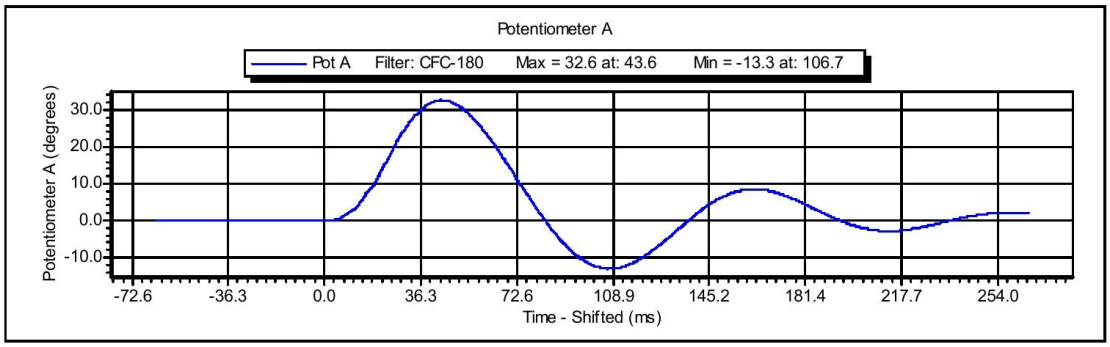

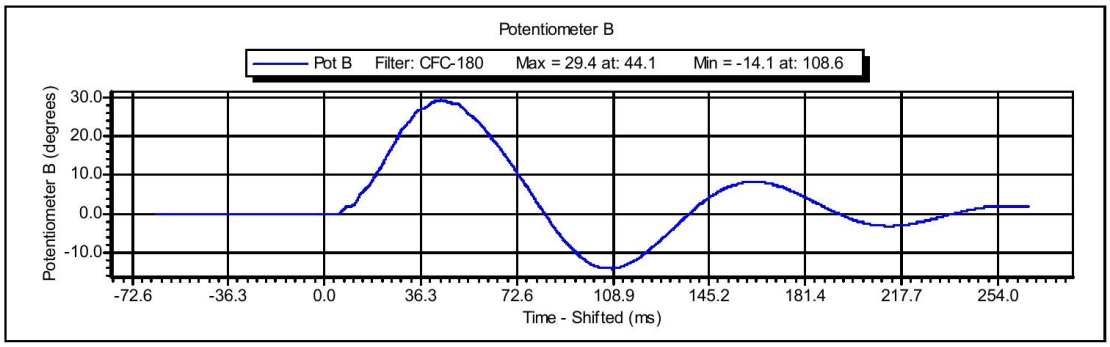

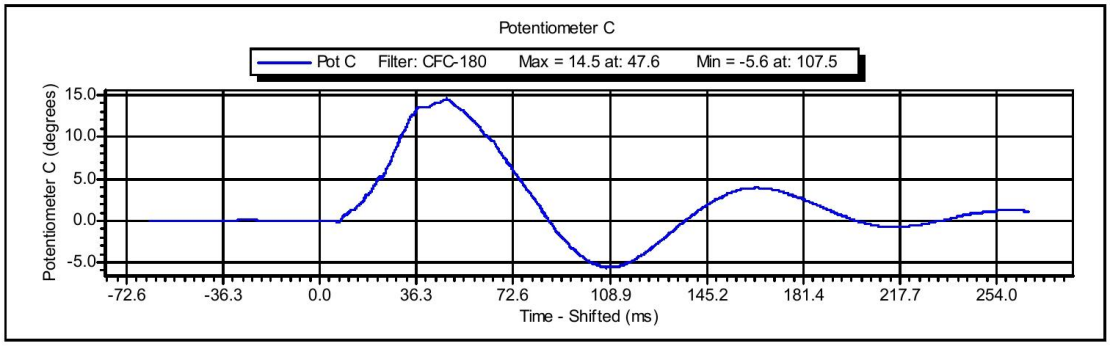

Test Time: **3:45:31 PM** Test Date: **6/11/2012**

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VERIFICATION REPORT

Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/29/2012**
Test Number:	**1**	Test Time:	**2:58:40 PM**

Component Part Number	Component Serial Number
Pelvis 455-4003	**0703L**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.8**	deg C	P
Humidity	10	--	70	**55**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Peak Pendulum Force	-5.40	--	-4.70	**-4.94**	kN	P
Time at Peak Pendulum Force	11.80	--	16.10	**14.13**	ms	P
Peak Pubic Symphysis Force	-1.59	--	-1.23	**-1.32**	kN	P
Time at Peak Pubic Symphysis Force	12.20	--	17.00	**14.63**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **2:58:40 PM** Test Date: **5/29/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
Denton	**3096**	**LC-465Fy**	**5/21/2012**

Test Time: **2:58:40 PM** Test Date: **5/29/2012**

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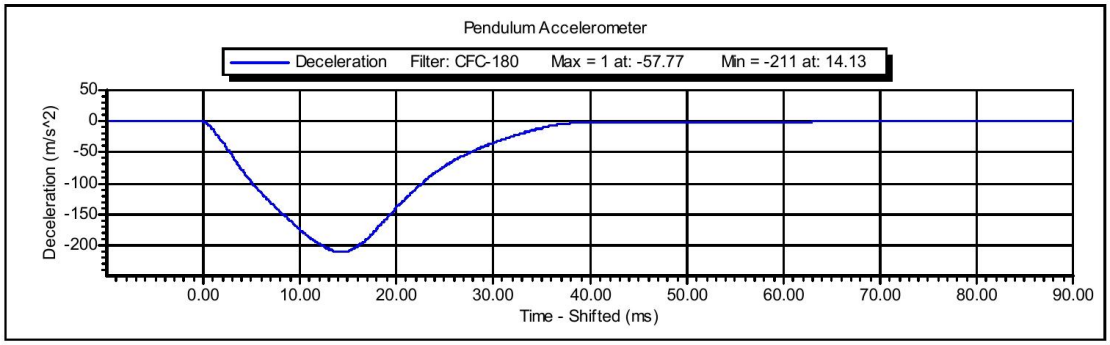
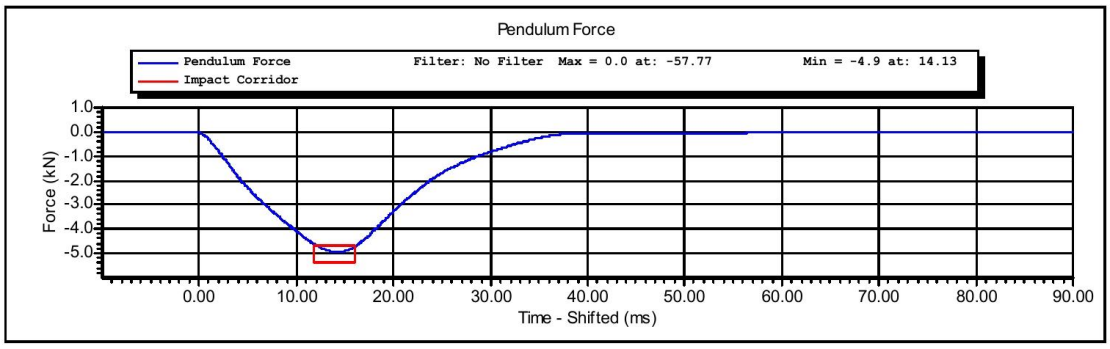
Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**5/29/2012**
Test Number:	**1**	Test Time:	**2:58:40 PM**





Test Time: **2:58:40 PM** Test Date: **5/29/2012**

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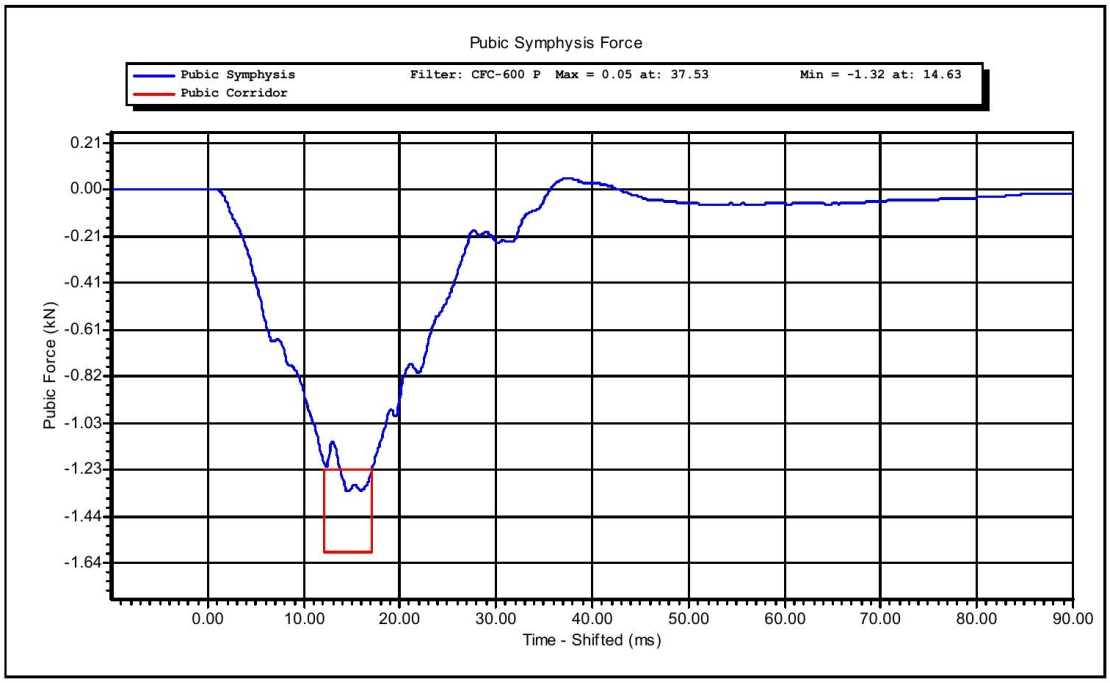

Test Time: **2:58:40 PM** Test Date: **5/29/2012**

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CALIBRATION TEST RESULTS

PRE-TEST

SID-IIS 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL No: 8012

(CONFIGURED FOR LEFT SIDE IMPACT)

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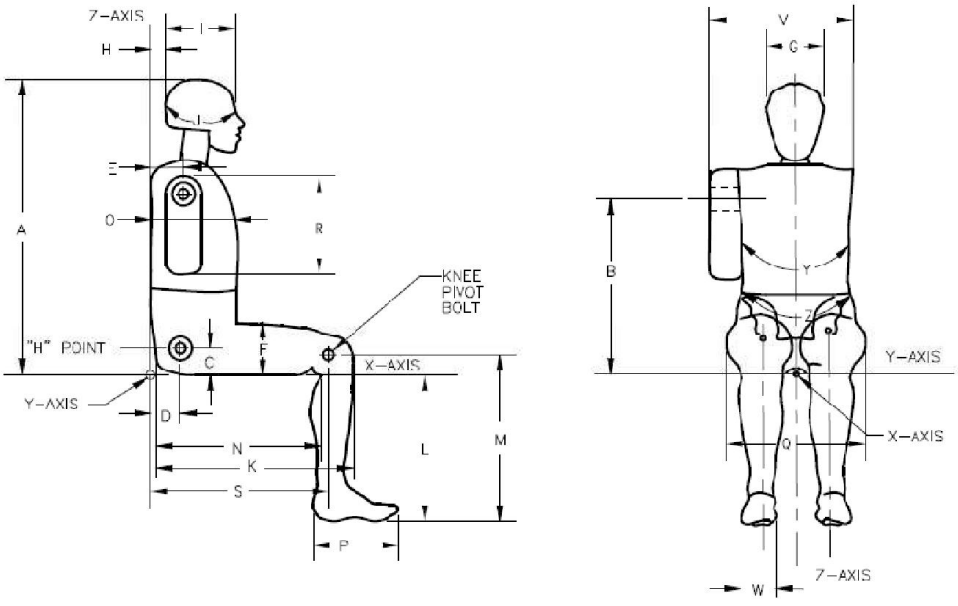
SID-IIsD External Measurements

NHTSA ATD S/N DG8012

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	780	Yes
B	Shoulder Pivot Height	437.0 - 453.0	442	Yes
C	H-Point Height	79.0 - 89.0	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	101	Yes
F	Thigh Clearance	119.0 - 135.0	128	Yes
G	Head Breadth	140.0 - 148.0	144	Yes
H	Head Back from Backline	40.0 - 46.0	43	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	530	Yes
L	Popliteal Height	343.0 - 369.0	346	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	397	Yes
N	Buttock Popliteal Length	416.0 - 442.0	431	Yes
O	Chest Depth without Jacket	195.0 - 211.0	205	Yes
P	Foot Length (right)	216.0 - 232.0	222	Yes
Q	Hip Breadth	313.0 - 323.0	318	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to Seat back	478.0 - 493.0	482	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	350	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	866	Yes
Z	Waist Circumference	761.0 - 791.0	767	Yes

Technician : Matthew Goehle 9/26/2012

SID-IIsD External Dimension Reference Diagram



SIDE VIEW

FRONT VIEW

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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**Dg8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**5:19:55 PM**

Component Part Number	Component Serial Number
Head Skin - 180-1002	**1362**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.4**	deg C	P
Humidity	10	--	70	**59**	%RH	P
Resultant Acceleration	115.0	--	137.0	**125.2**	g	P
Oscillation	0.0	--	15.0	**1.3**	%	P
Fore-Aft Acceleration	-15.0	--	15.0	**5.2**	g	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **5:19:55 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P49185**	**5/18/2012**
Endevco	**7264-2000**	**P51994**	**5/18/2012**
Endevco	**7264-2000**	**P51991**	**5/18/2012**

Test Time: **5:19:55 PM** Test Date: **9/26/2012**

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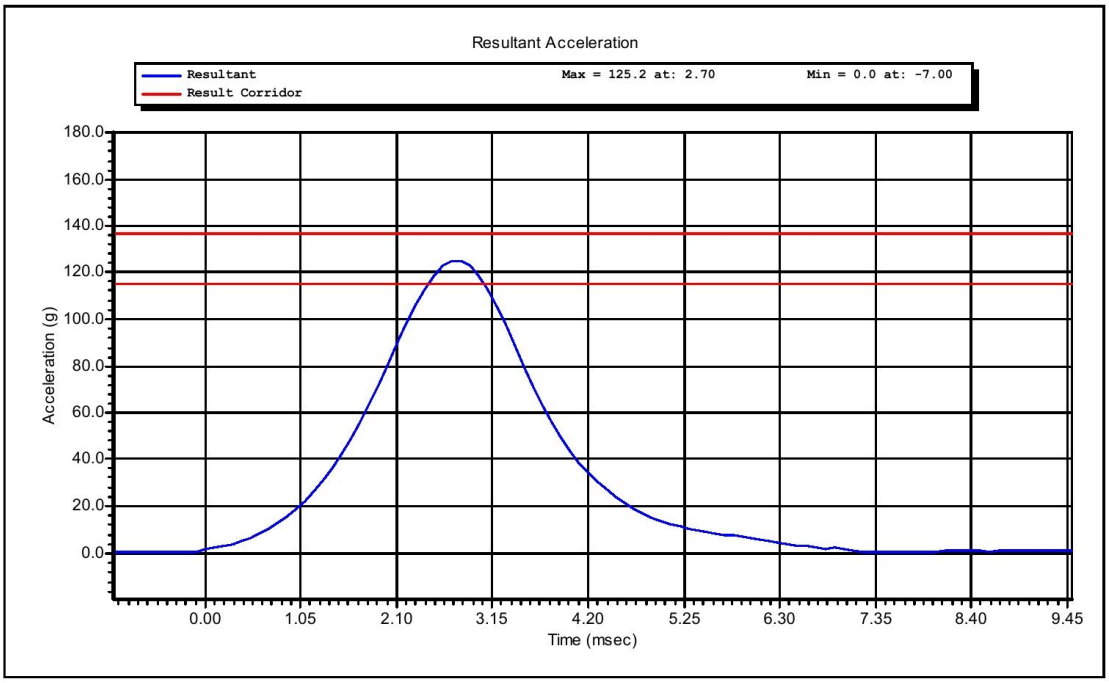
Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**Dg8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**5:19:55 PM**



Test Time: **5:19:55 PM** Test Date: **9/26/2012**

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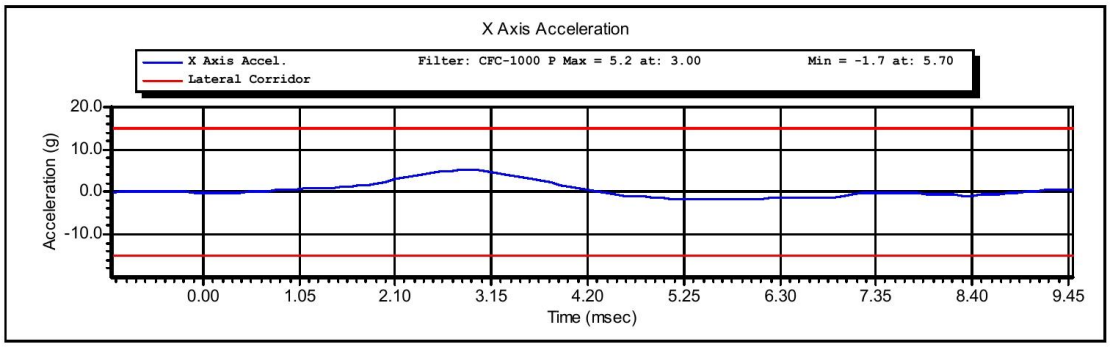

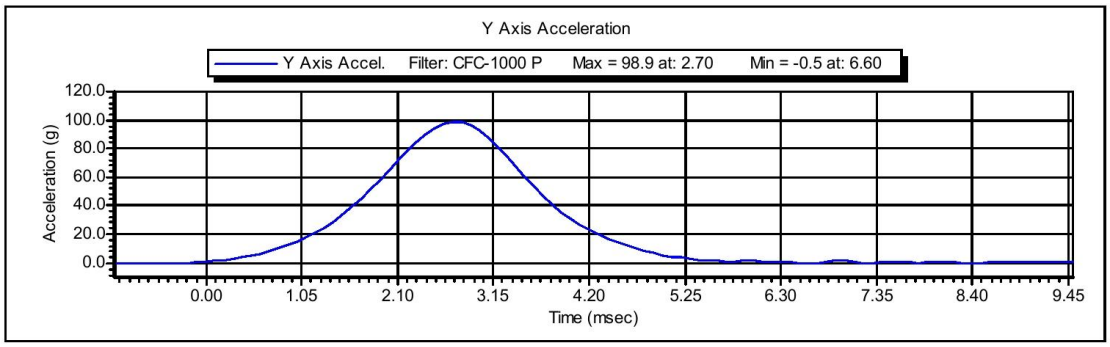

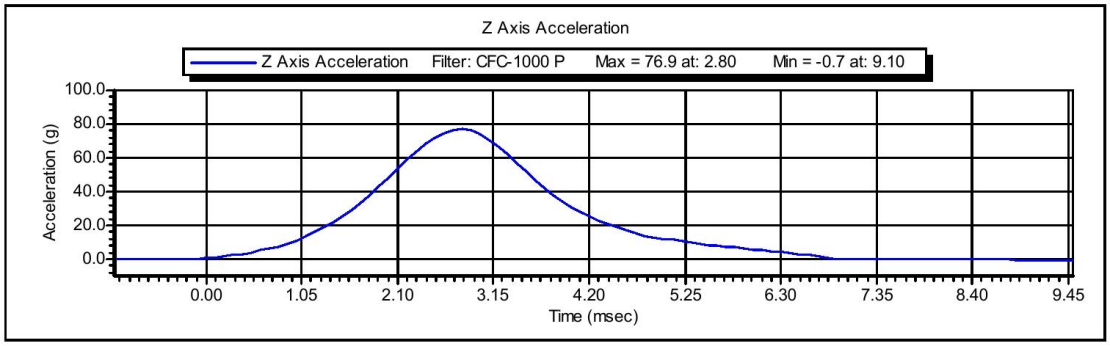

Test Time: **5:19:55 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

Test Name:	**Neck Pendulum**	Revision:	**8/24/2009**
Sub Test Name:	**Left Side**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**2**	Test Time:	**7:14:57 PM**

Component Part Number	Component Serial Number
Neck - 180-2000	**DG7061**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.5** deg C		P
Humidity	10	--	70	**45** %RH		P
Velocity	5.51	--	5.63	**5.61** m/s		P
Pendulum Impulse at 10 ms	2.20	--	2.80	**2.48** m/s		P
Pendulum Impulse at 15 ms	3.30	--	4.10	**3.63** m/s		P
Pendulum Impulse at 20 ms	4.40	--	5.40	**4.91** m/s		P
Pendulum Impulse at 25 ms	5.40	--	6.10	**5.64** m/s		P
Pendulum Impulse between 25 and 100 ms	5.50	--	6.20	**5.64** m/s		P
Max D Plane Rotation	71.0	--	81.0	**74.0** degrees		P
Time at Max Rotation	50.0	--	70.0	**60.4** ms		P
Moment about OC	-44.0	--	-36.0	**-42.7** Nm		P
Moment Decay to Zero	102.0	--	126.0	**113.8** ms		P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test Time: **7:14:57 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C15016**	**8/15/2012**
Denton	**1716A**	**LC-1591 Fy**	**5/21/2012**
Denton	**1716A**	**LC-1591 Mx**	**5/21/2012**
DentonATD	**78051-342**	**184**	**5/30/2012**
DentonATD	**78051-342**	**174**	**5/30/2012**
DentonATD	**78051-342**	**185**	**5/30/2012**

Test Time: **7:14:57 PM** Test Date: **9/26/2012**

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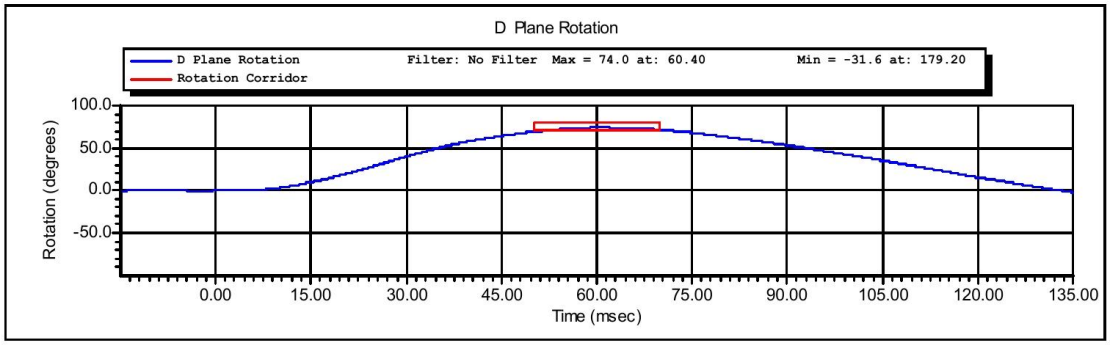
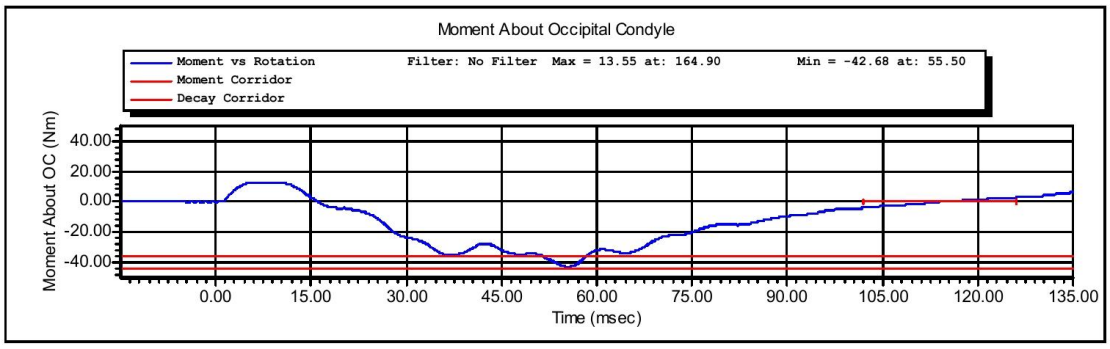
Test Name:	**Neck Pendulum**	Revision:	**8/24/2009**
Sub Test Name:	**Left Side**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**2**	Test Time:	**7:14:57 PM**





Test Time: **7:14:57 PM** Test Date: **9/26/2012**

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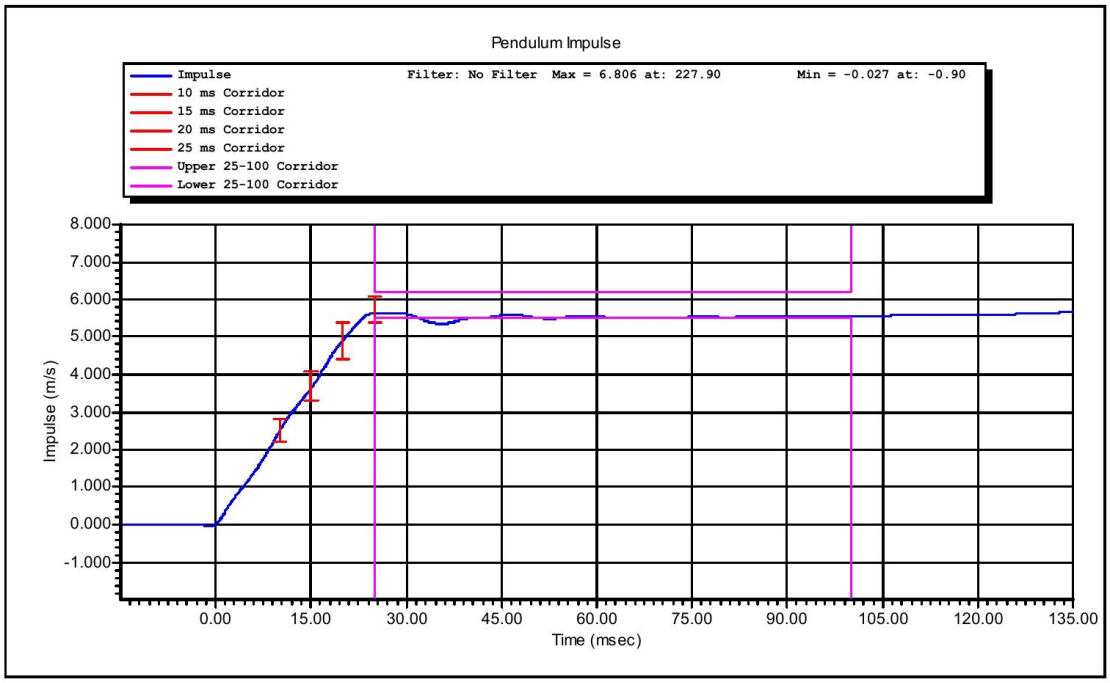

Test Time: **7:14:57 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

Test Name:	**Shoulder Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**8:48:33 PM**

Component Part Number	Component Serial Number
Left Arm 180-6011-1	**1012**
Shoulder Rib 180-3355	**286**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.00**	deg C	P
Humidity	10.0	--	70.0	**45.1**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Probe Acceleration	13.0	--	18.0	**15.2**	g	P
Shoulder Deflection	28.0	--	37.0	**28.0**	mm	P
T1 Acceleration	17.0	--	22.0	**20.0**	g	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **8:48:33 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
FTSS	**180-3881-1**	**DS-1845**	**5/17/2012**
Endevco	**7264-2000**	**P51875**	**5/17/2012**

Test Time: **8:48:33 PM** Test Date: **9/26/2012**

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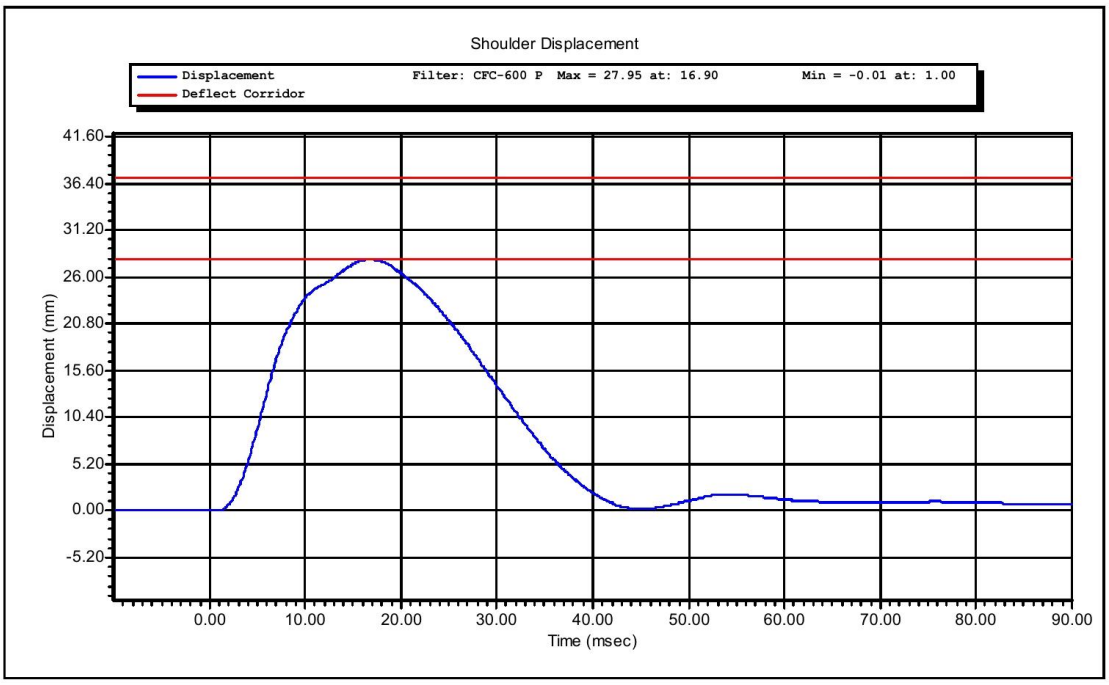
Test Name:	**Shoulder Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**8:48:33 PM**



Test Time: **8:48:33 PM** Test Date: **9/26/2012**

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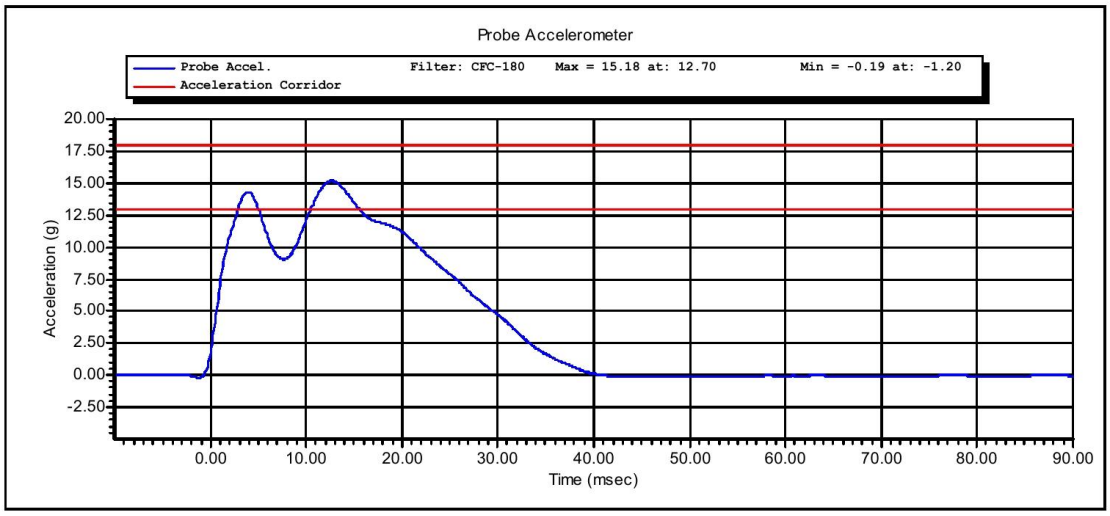

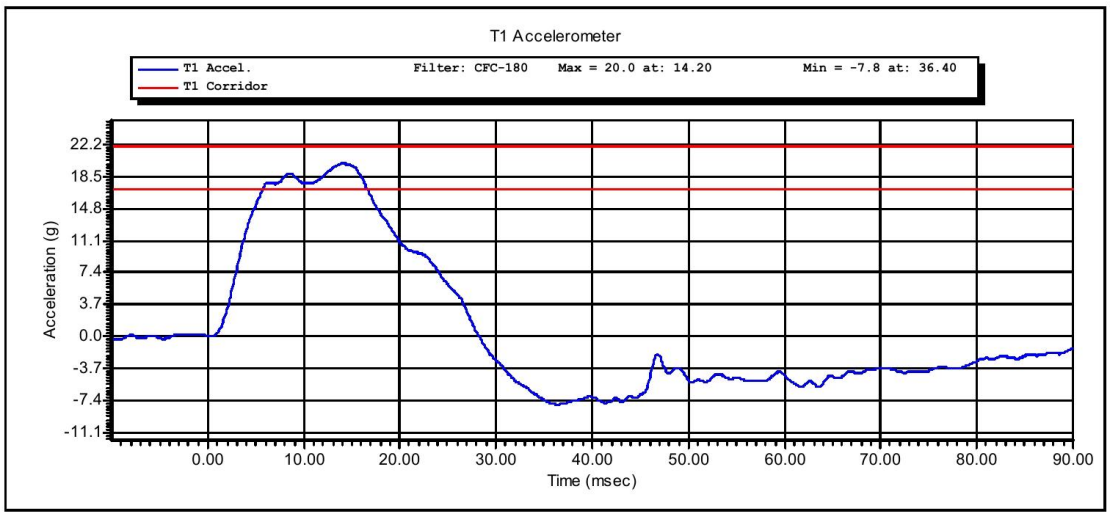

Test Time: **8:48:33 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

Test Name:	**Thorax Impact without Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**8:35:34 PM**

Component Part Number	Component Serial Number
Thorax Ribs 1, 2, 3 180-3362	**DG6080, DG6081, DG7543**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10	--	70	**46**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Probe Acceleration	14.0	--	18.0	**16.3**	g	P
Upper Thorax Rib Deflection	32.0	--	40.0	**37.7**	mm	P
Mid Thorax Rib Deflection	39.0	--	45.0	**42.3**	mm	P
Lower Thorax Rib Deflection	35.0	--	43.0	**38.4**	mm	P
Upper Spine Acceleration T1	13.0	--	17.0	**15.9**	g	P
Lower Spine Acceleration T12	7.0	--	11.0	**10.1**	g	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **8:35:34 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
FTSS	**180-3881-1**	**DS-1849**	**5/16/2012**
Servo	**180-3881-1**	**DS-1514**	**5/16/2012**
FTSS	**180-3881-1**	**DS-1859**	**5/16/2012**
Endevco	**7264-2000**	**P51875**	**5/17/2012**
Endevco	**7264-2000**	**P58796**	**5/17/2012**

Test Time: **8:35:34 PM** Test Date: **9/26/2012**

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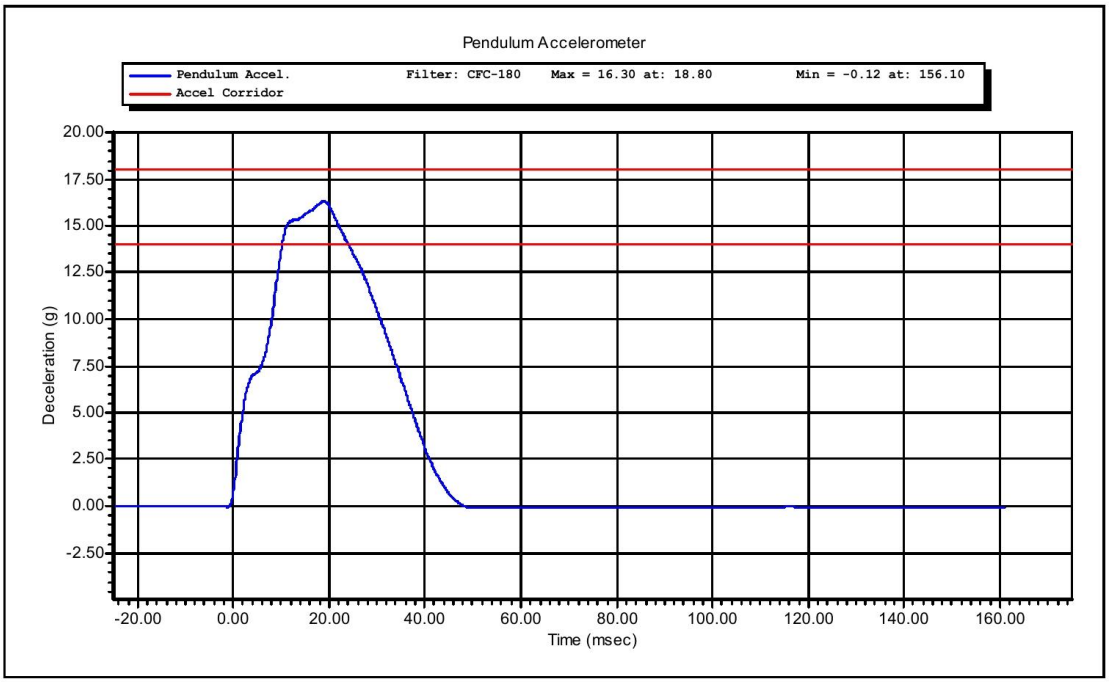
Test Name:	**Thorax Impact without Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**8:35:34 PM**



Test Time: **8:35:34 PM** Test Date: **9/26/2012**

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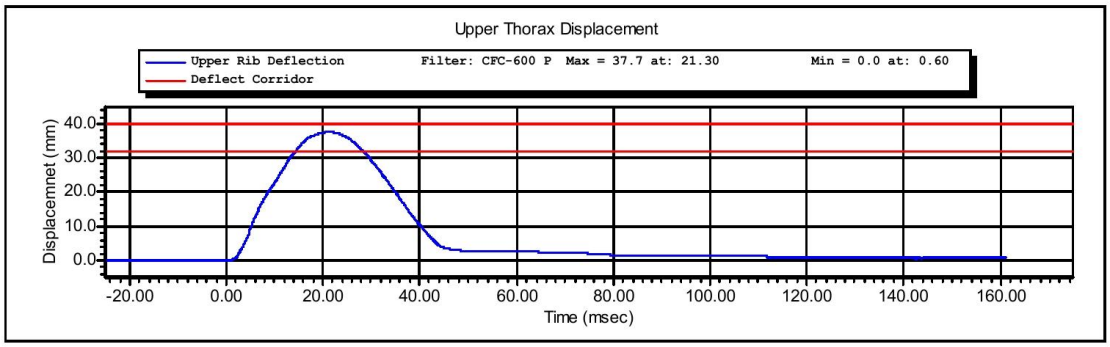

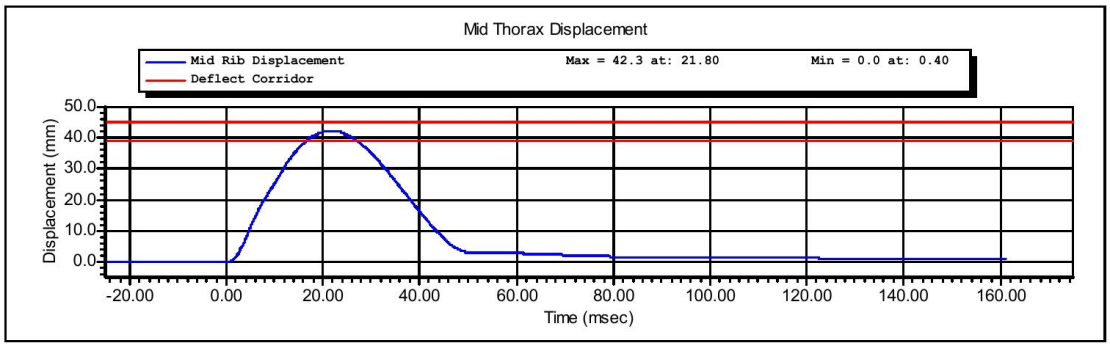

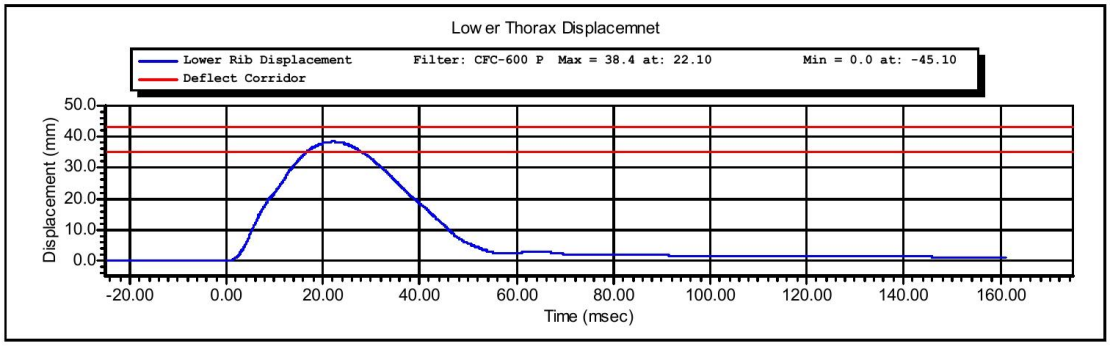

Test Time: **8:35:34 PM** Test Date: **9/26/2012**

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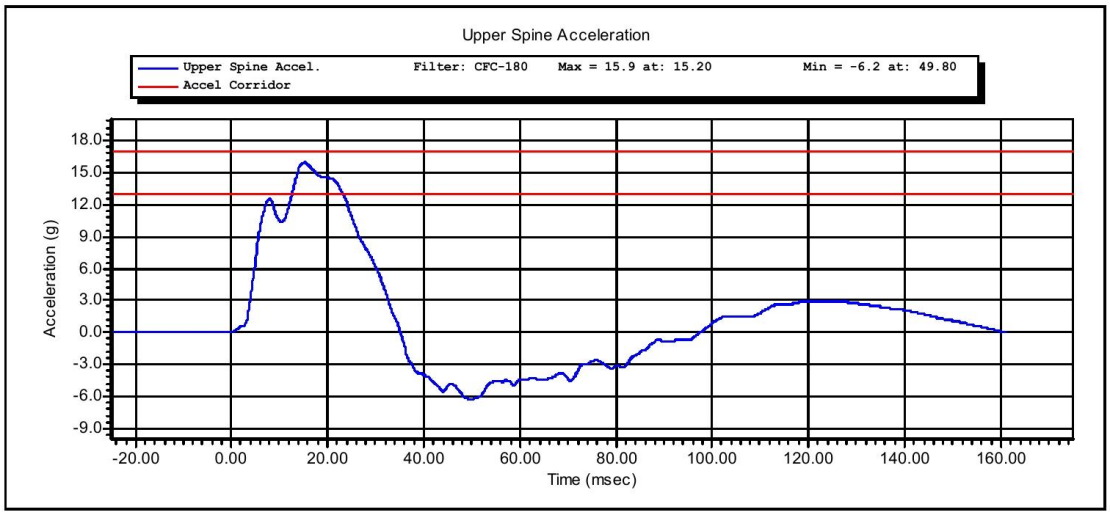

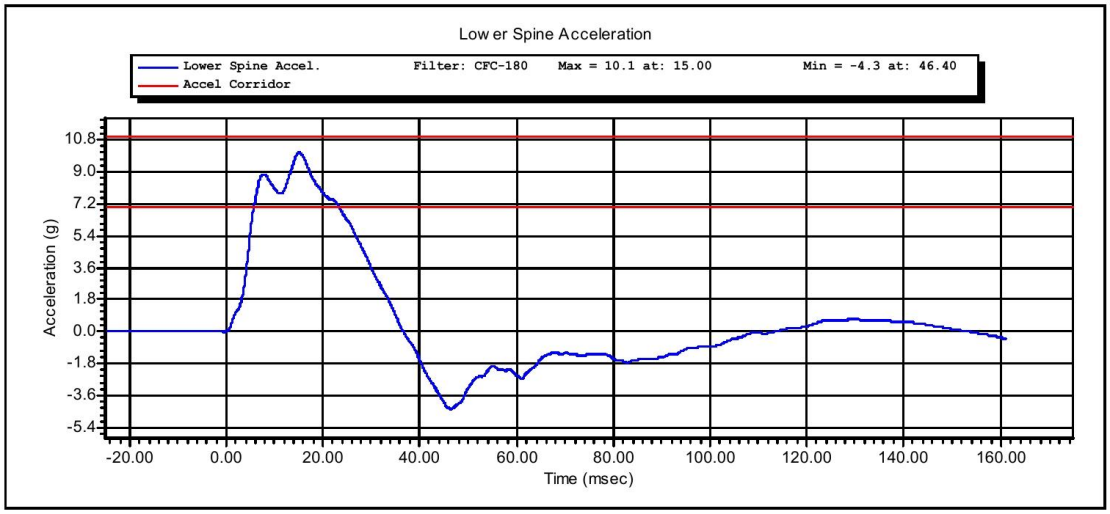

Test Time: **8:35:34 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

Test Name:	**Thorax Impact with Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**9:09:32 PM**

Component Part Number	Component Serial Number
Thorax Ribs 1, 2, 3 180-3362	**DG6080, DG6081, DG7543**
Shoulder Rib 180-3355	**286**
Left Arm 180-6011-1	**1012**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**20.9**	deg C	P
Humidity	10	--	70	**45**	%RH	P
Velocity	6.60	--	6.80	**6.71**	m/s	P
Probe Acceleration after 5ms	30.0	--	36.0	**32.5**	g	P
Upper Thorax Rib Deflection	25.0	--	32.0	**26.2**	mm	P
Mid Thorax Rib Deflection	30.0	--	36.0	**31.2**	mm	P
Lower Thorax Rib Deflection	32.0	--	38.0	**33.3**	mm	P
Upper Spine Acceleration ("y")	34.0	--	43.0	**42.0**	g	P
Lower Spine Acceleration ("y")	29.0	--	37.0	**33.7**	g	P
Shoulder Deflection	31.0	--	40.0	**32.9**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **9:09:32 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
FTSS	**180-3881-1**	**DS-1849**	**5/16/2012**
Servo	**180-3881-1**	**DS-1514**	**5/16/2012**
FTSS	**180-3881-1**	**DS-1859**	**5/16/2012**
Endevco	**7264-2000**	**P51875**	**5/17/2012**
Endevco	**7264-2000**	**P58796**	**5/17/2012**
FTSS	**180-3881-1**	**DS-1845**	**5/17/2012**

Test Time: **9:09:32 PM** Test Date: **9/26/2012**

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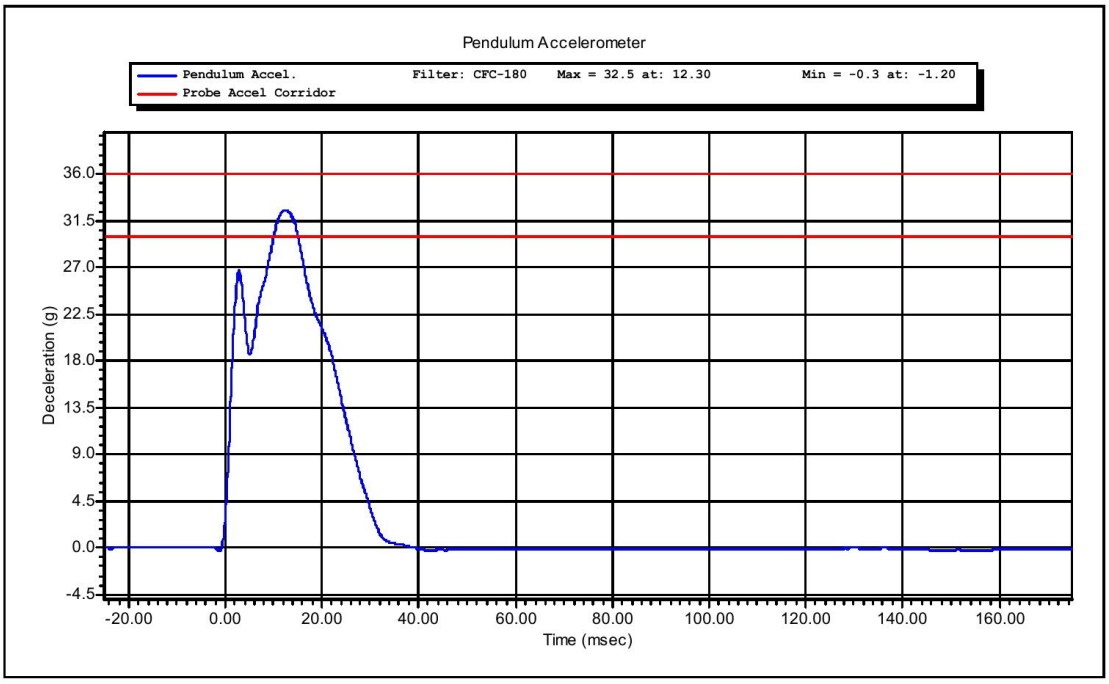
Test Name:	**Thorax Impact with Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**9:09:32 PM**



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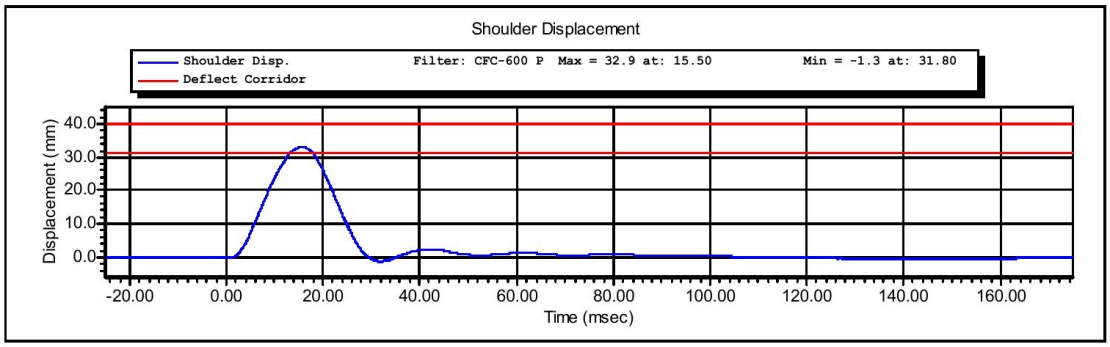

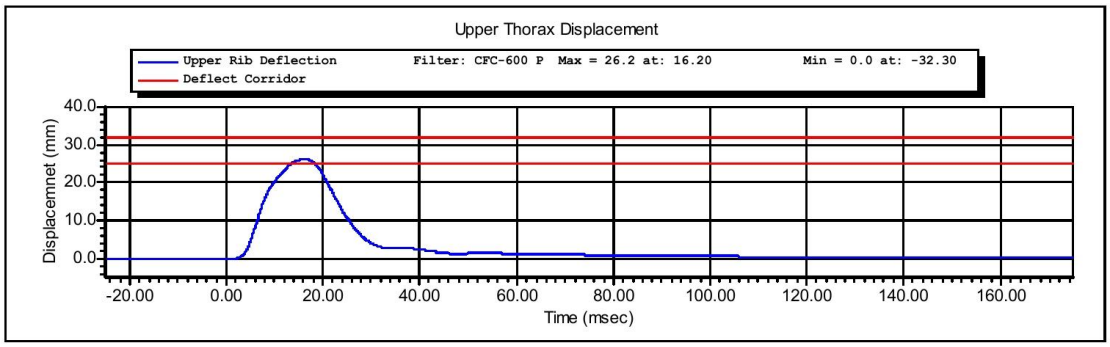

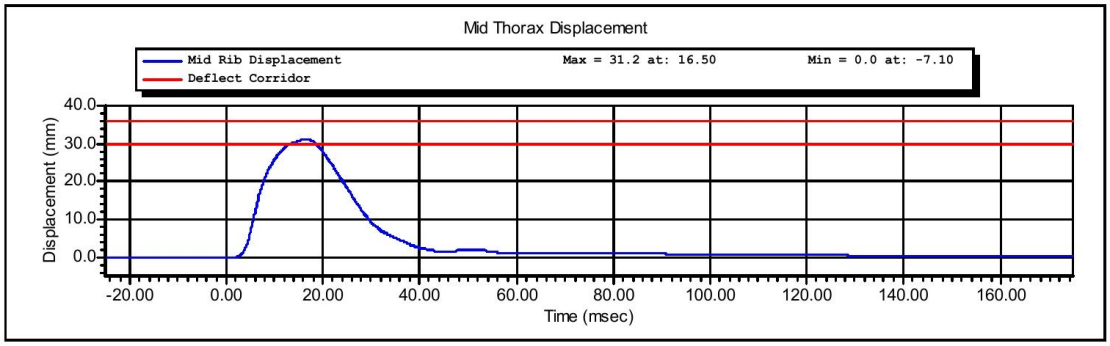

Test Time: **9:09:32 PM** Test Date: **9/26/2012**

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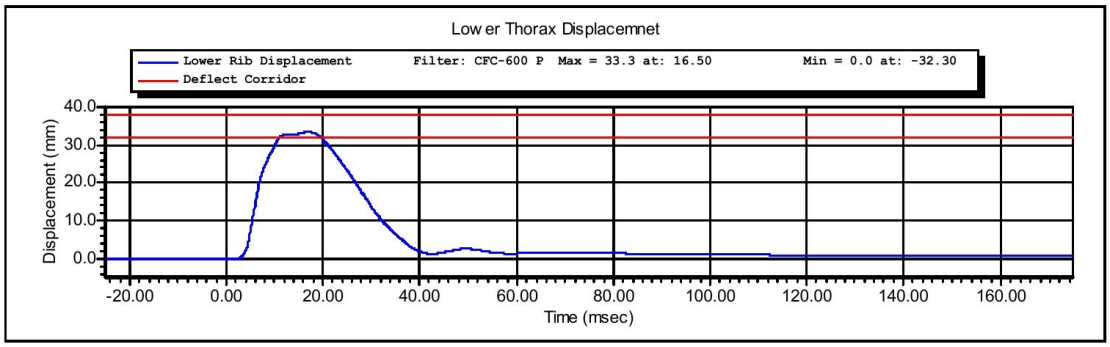

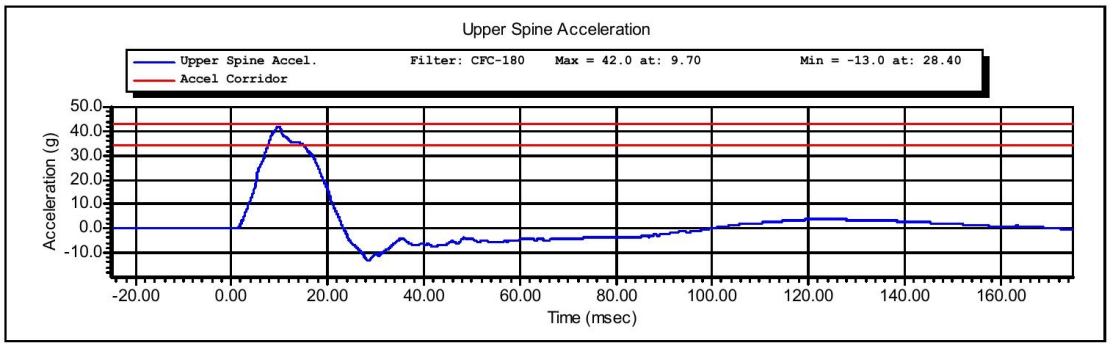

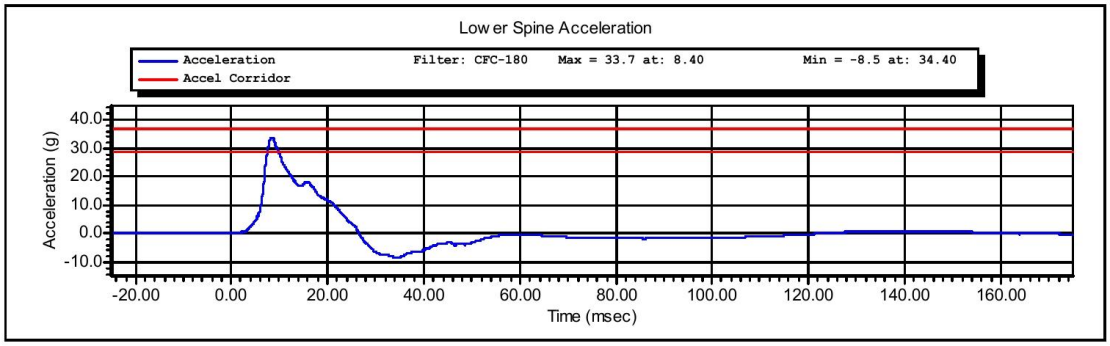

Test Time: **9:09:32 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

Test Name:	**Abdominal Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**8:20:57 PM**

Component Part Number	Component Serial Number

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.1**	deg C	P
Humidity	10	--	70	**46**	%RH	P
Velocity	4.20	--	4.40	**4.32**	m/s	P
Probe Acceleration	12.0	--	16.0	**13.9**	g	P
Upper Abdominal Rib Deflection	36.0	--	47.0	**43.9**	mm	P
Lower Abdominal Rib Deflection	33.0	--	44.0	**40.0**	mm	P
Lower Spine Acceleration - T12	9.0	--	14.0	**11.2**	g	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **8:20:57 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
FTSS	**180-3881-1**	**DS-1860**	**5/16/2012**
FTSS	**180-3881-1**	**DS-1861**	**5/16/2012**
Endevco	**7264-2000**	**P58796**	**5/17/2012**

Test Time: **8:20:57 PM** Test Date: **9/26/2012**

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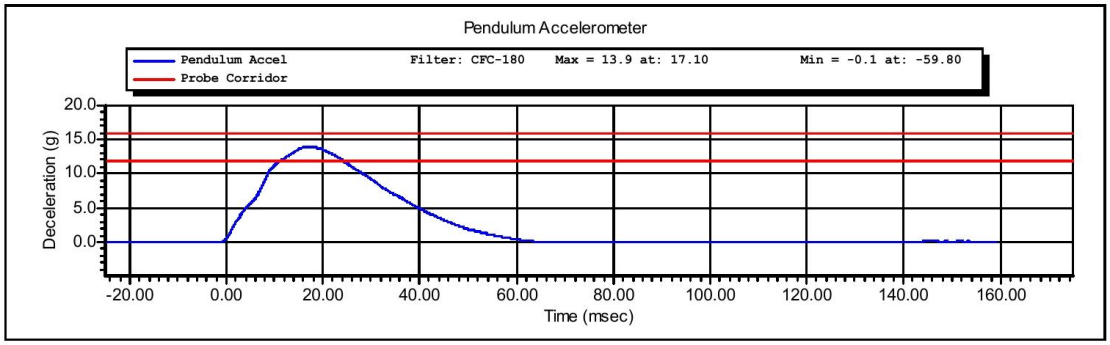
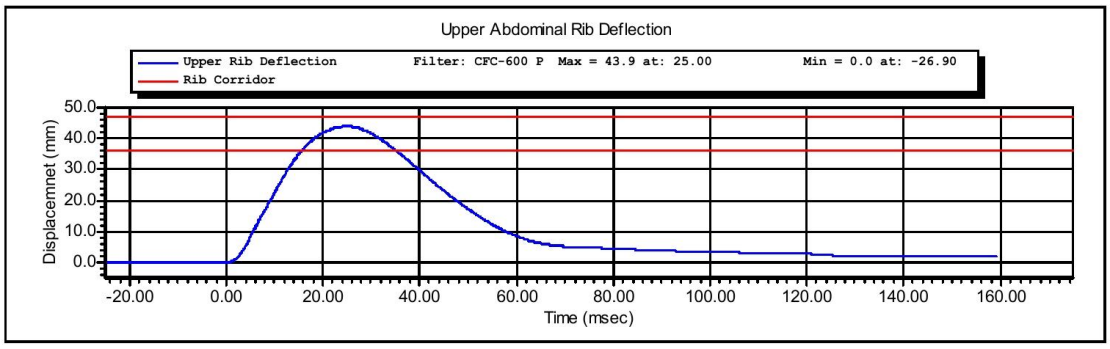
Test Name:	**Abdominal Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**1**	Test Time:	**8:20:57 PM**





Test Time: **8:20:57 PM** Test Date: **9/26/2012**

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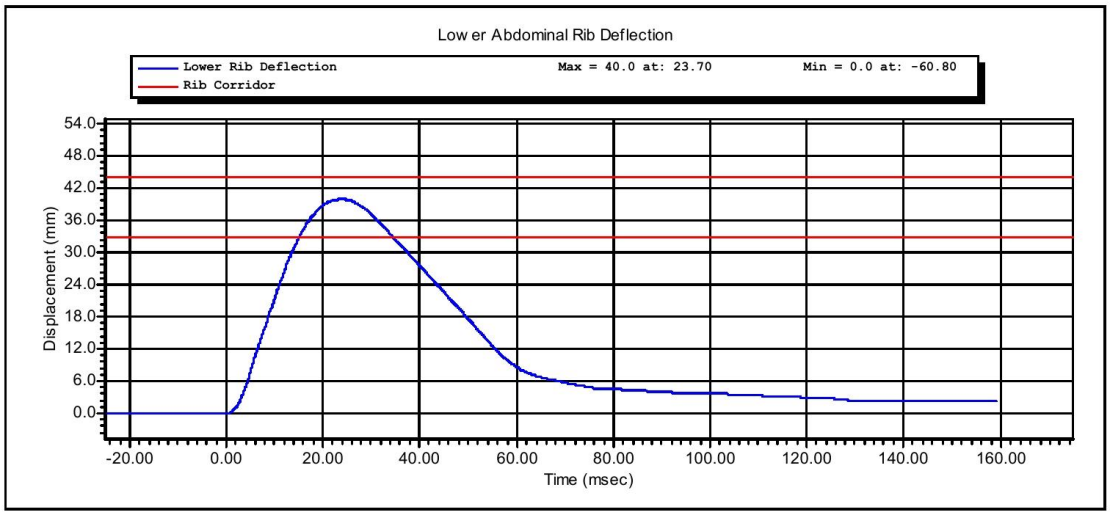

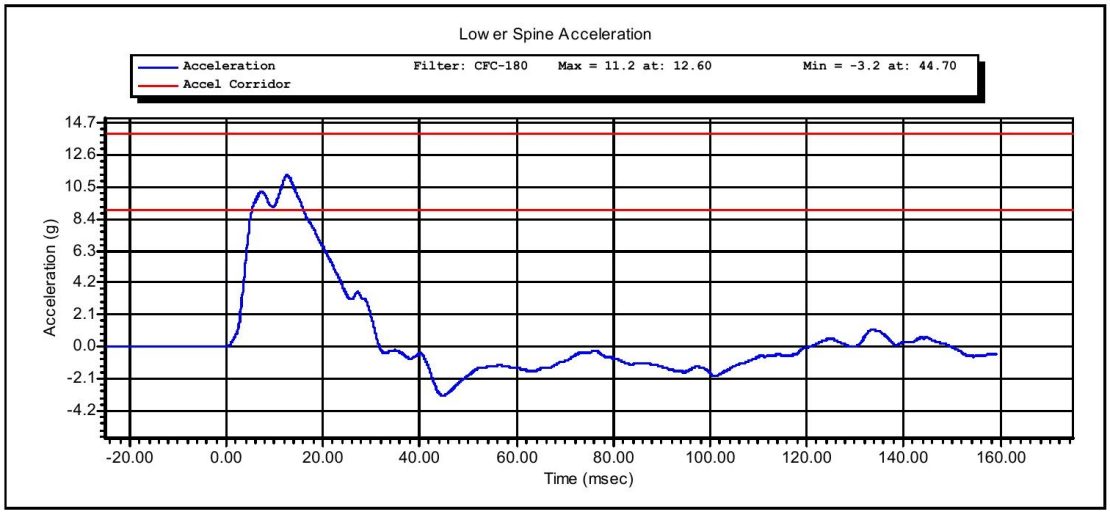

Test Time: **8:20:57 PM** Test Date: **9/26/2012**

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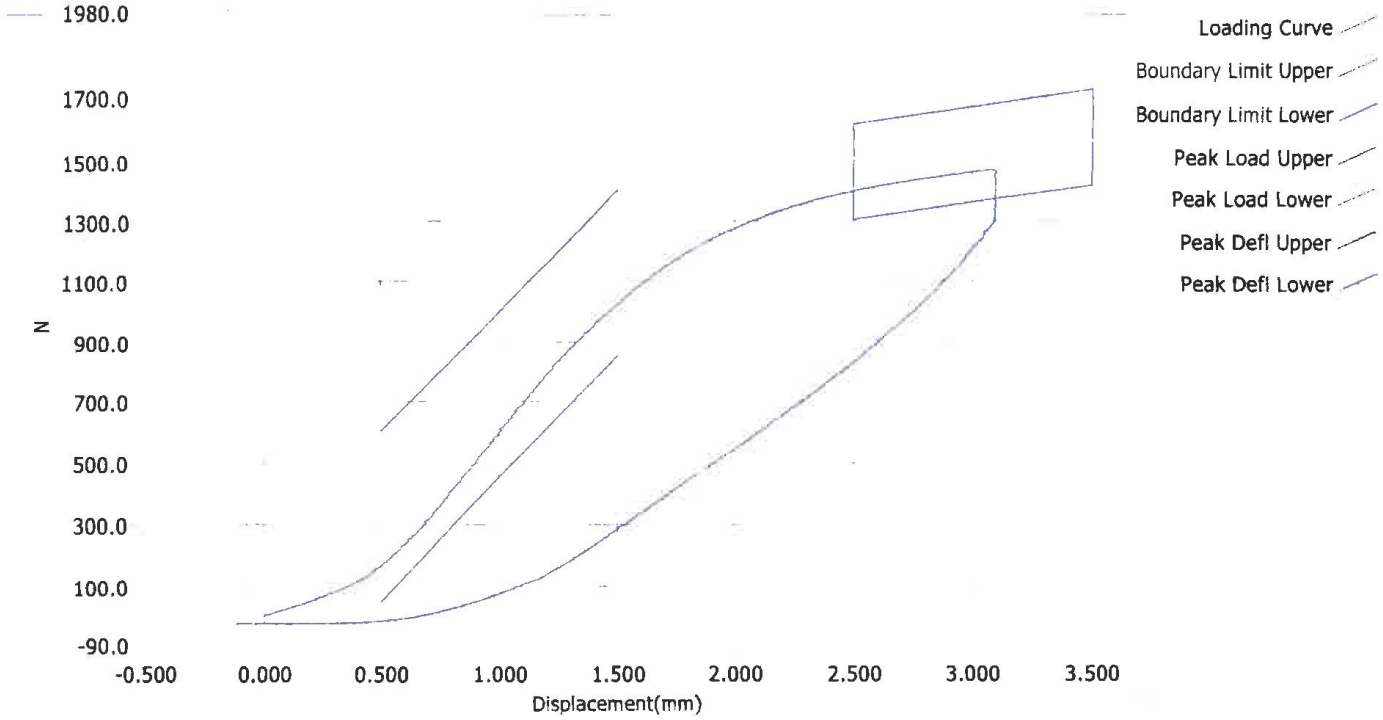
Crash

Resultant Data - SIDIIs Plug Compression



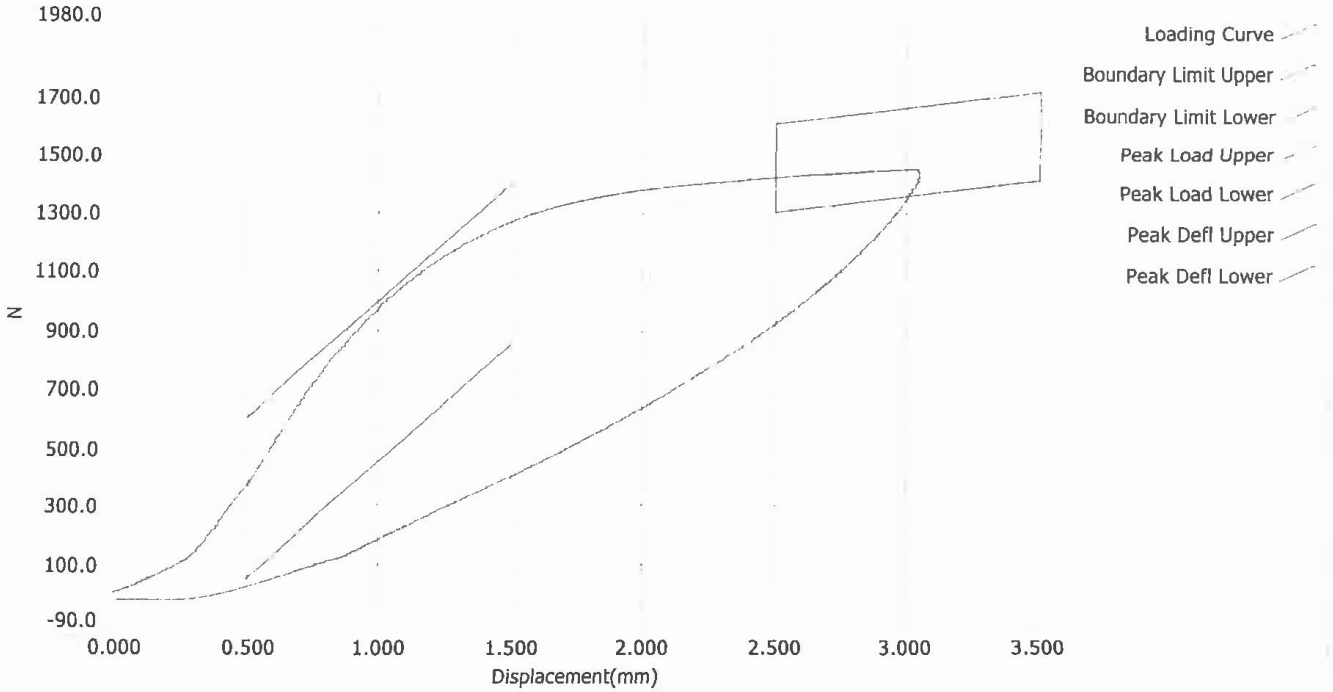
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	46474	9/22/2011	9:05 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 9/22/2011 Current Time : 21:06:32

Cert

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
		9/23/2010	2:17 AM
Cert ID	ATD Serial Number	ATD Type	
	36398	SIDIIs	

Current Date : 9/23/2010 Current Time : 02:19:02

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VERIFICATION REPORT

Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Acetabulum Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**Dg8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**2**	Test Time:	**9:52:57 PM**

Component Part Number	Component Serial Number
180-4343 Pelvis Flesh	**DJ0959**
FTSS Cert Plug - 1454N	**36398**
FTSS Test Plug 1462	**46474**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.5**	deg C	P
Humidity	10	--	70	**45**	%RH	P
Velocity	6.60	--	6.80	**6.61**	m/s	P
Peak Probe Acceleration	38.0	--	47.0	**44.7**	g	P
Peak Pelvis Acceleration	34.0	--	42.0	**39.5**	g	P
Peak Acetabulum Force	3.60	--	4.30	**3.77**	kN	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **9:52:57 PM** Test Date: **9/26/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
Endevco	**7264-2000**	**P63561**	**5/17/2012**
DentonATD	**3249J**	**LC-267Fy**	**5/21/2012**

Test Time: **9:52:57 PM** Test Date: **9/26/2012**

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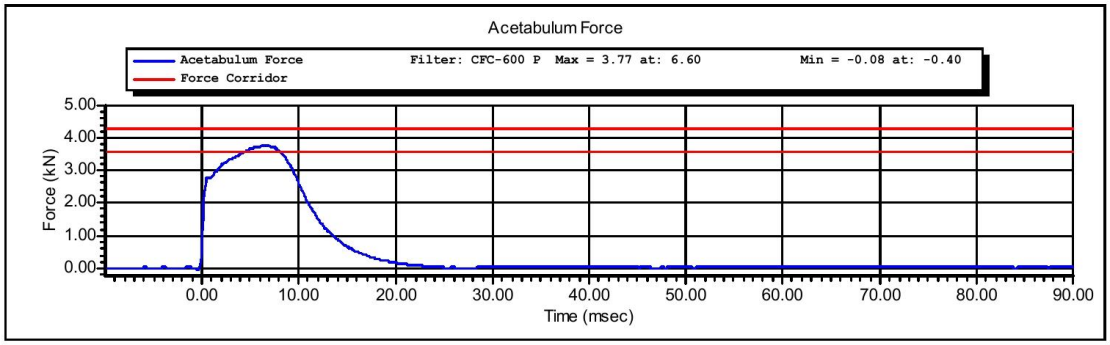
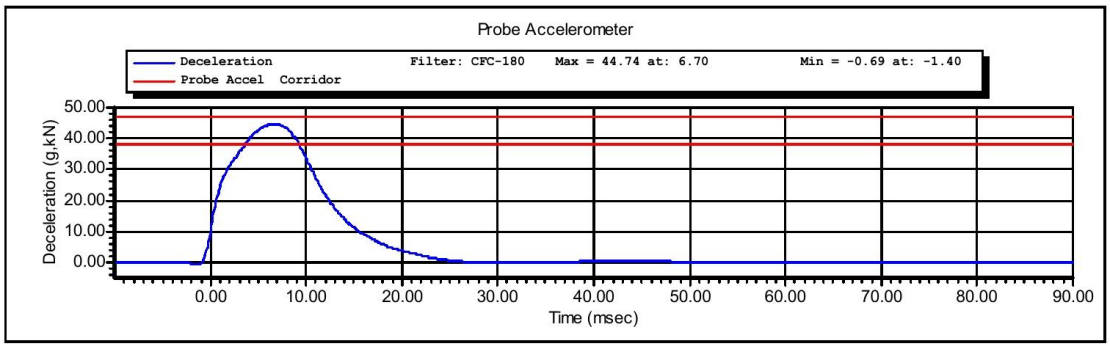
Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Acetabulum Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**Dg8012**		
Test ID:		Test Date:	**9/26/2012**
Test Number:	**2**	Test Time:	**9:52:57 PM**





Test Time: **9:52:57 PM** Test Date: **9/26/2012**

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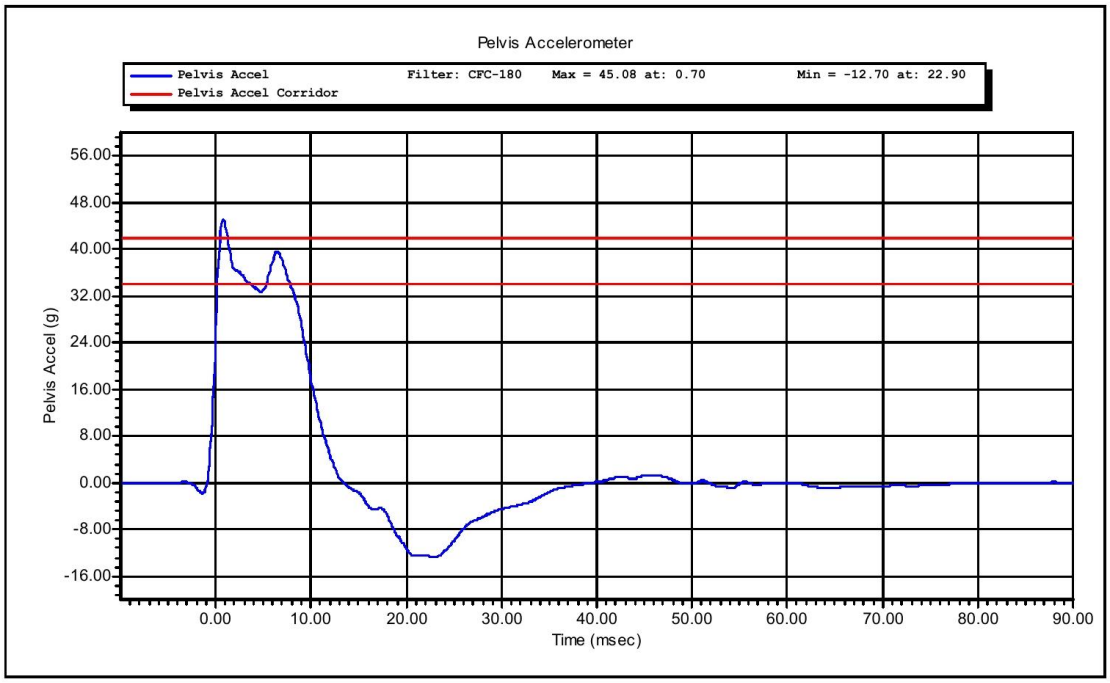

Test Time: **9:52:57 PM** Test Date: **9/26/2012**

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CALIBRATION TEST RESULTS

POST-TEST

EUROSID 2 (ES-2RE) MALE – DRIVER ATD

SERIAL NO: F034

(CONFIGURED FOR LEFT SIDE IMPACT)

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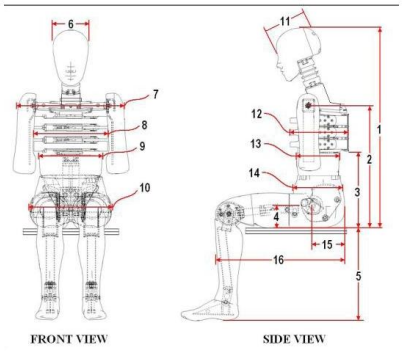
ES-2re External Measurements

NHTSA S/N F034



Dim. No.	Description	Specification (mm)	Result (mm)	Pass/Fail
1	Sitting Height	900-918	913	Pass
2	Seat to Shoulder Joint	558-572	562	Pass
3	Seat to Lower Face of Thoracic Spine Box	346-356	355	Pass
4	Seat to Hip Joint (center of bolt)	97-103	100	Pass
5	Sole to Seat, Sitting	433-451	445	Pass
6	Head Width	152-158	155	Pass
7	Shoulder/Arm Width	461-479	468	Pass
8	Thorax Width	322-332	327	Pass
9	Abdomen Width	273-287	284	Pass
10	Pelvis Lap Width	359-373	371	Pass
11	Head Depth	196-206	201	Pass
12	Thorax Depth	262-272	269	Pass
13	Abdomen Depth	194-204	200	Pass
14	Pelvis Depth	235-245	238	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150-160	156	Pass
16	Back of Buttocks to Front Knee	597-615	607	Pass

Technician: SZ Date: 10/03/2012

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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**2:10:18 PM**

Component Part Number	Component Serial Number
455-1007	**1916409**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**47**	%RH	P
Resultant Acceleration	125	--	155	**147**	g	P
Oscillation	0.0	--	15.0	**2.4**	%	P
Fore-Aft Acceleration	-15.00	--	15.00	**6.90**	g	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **2:10:18 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P58737**	**5/17/2012**
Endevco	**7264-2000**	**P52022**	**5/17/2012**
Endevco	**7264-2000**	**P52040**	**5/17/2012**

Test Time: **2:10:18 PM** Test Date: **10/2/2012**

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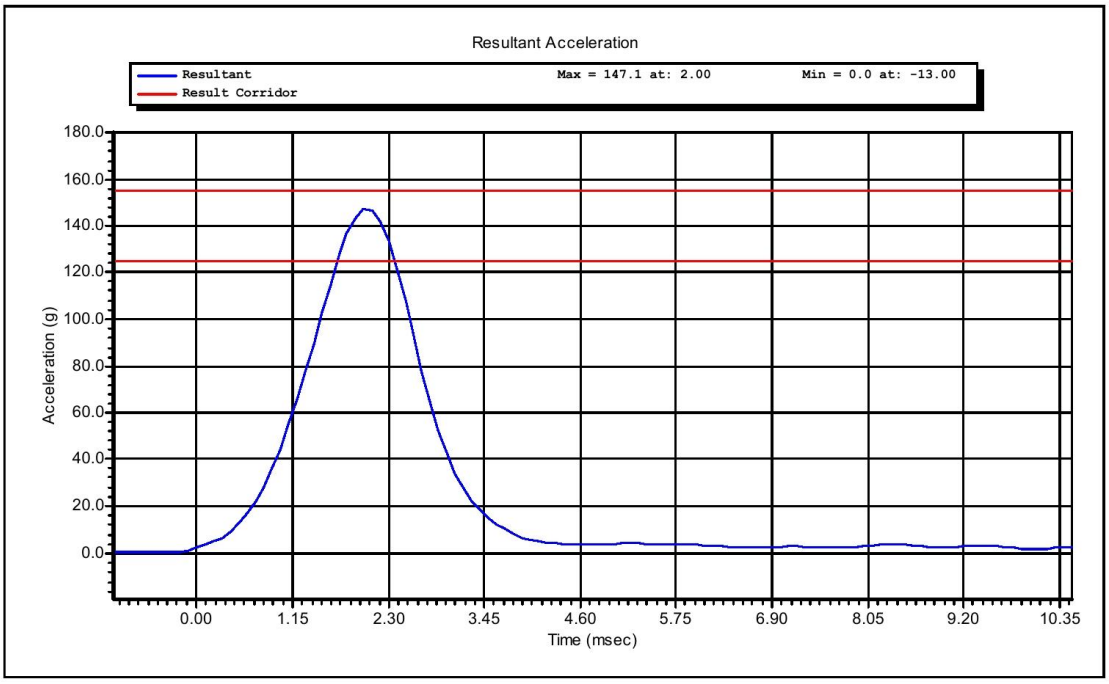
Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**2:10:18 PM**



Test Time: **2:10:18 PM** Test Date: **10/2/2012**

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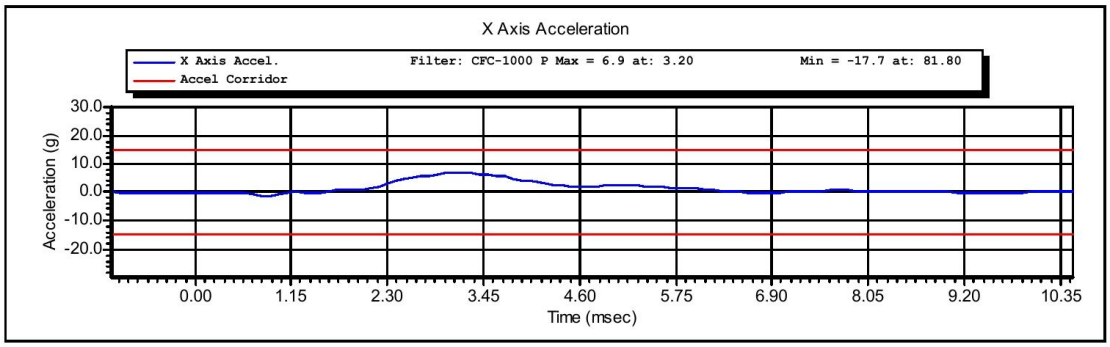

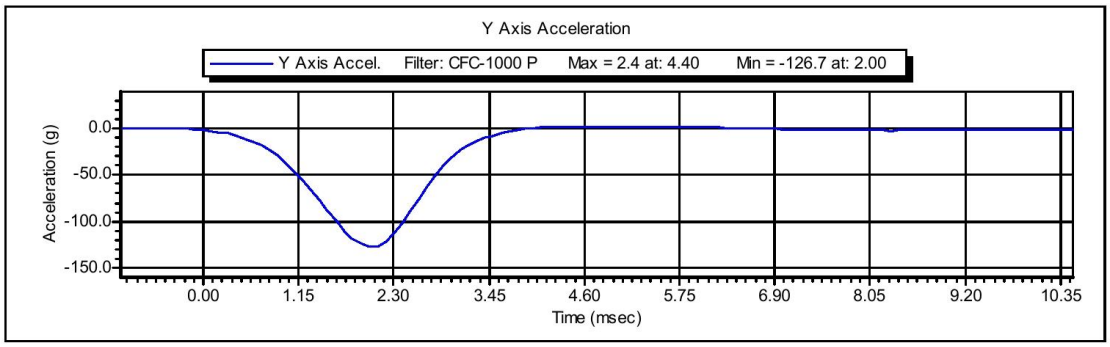

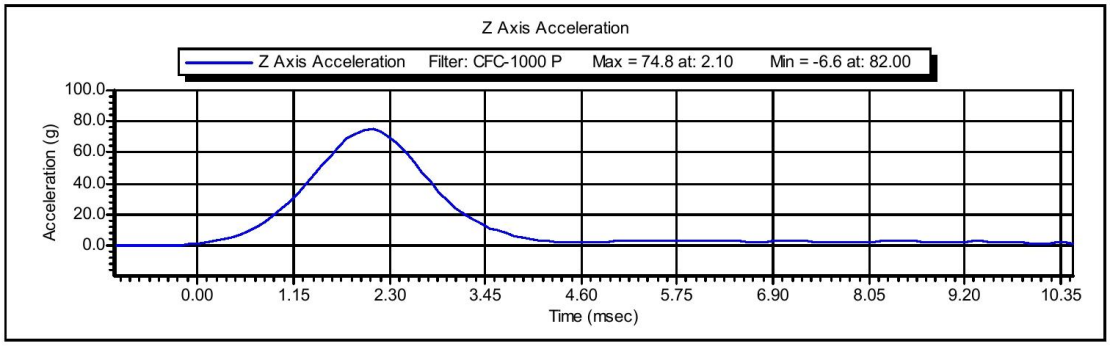

Test Time: **2:10:18 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**8:12:30 AM**

Component Part Number	Component Serial Number
455-2002	

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.4**	deg C	P
Humidity	10	--	70	**60**	%RH	P
Velocity	3.30	--	3.50	**3.47**	m/s	P
Maximum Neck Flexion Angle	49.0	--	59.0	**51.6**	degrees	P
Time At Maximum Neck Flexion	54.0	--	66.0	**59.8**	ms	P
Decay to Zero Degrees	53.0	--	88.0	**62.1**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **8:12:30 AM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C15016**	**8/15/2012**
DentonATD	**7000428**	**094**	**5/30/2012**
DentonATD	**7000428**	**095**	**5/30/2012**
DentonATD	**7000428**	**093**	**5/30/2012**

Test Time: **8:12:30 AM** Test Date: **10/3/2012**

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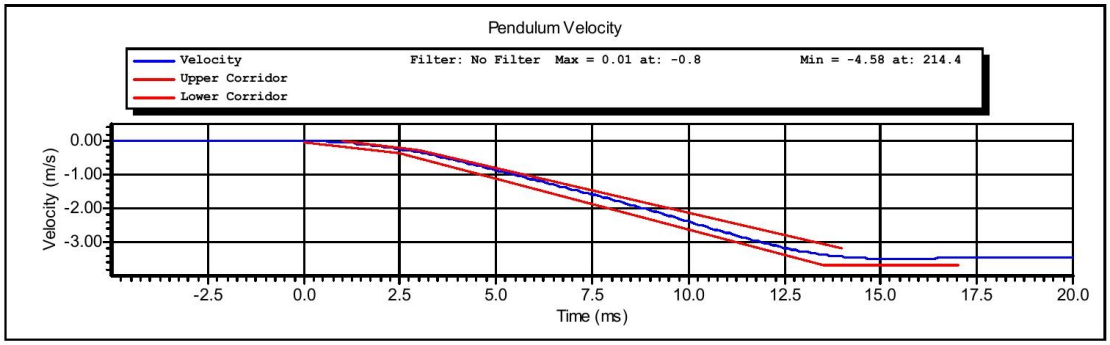
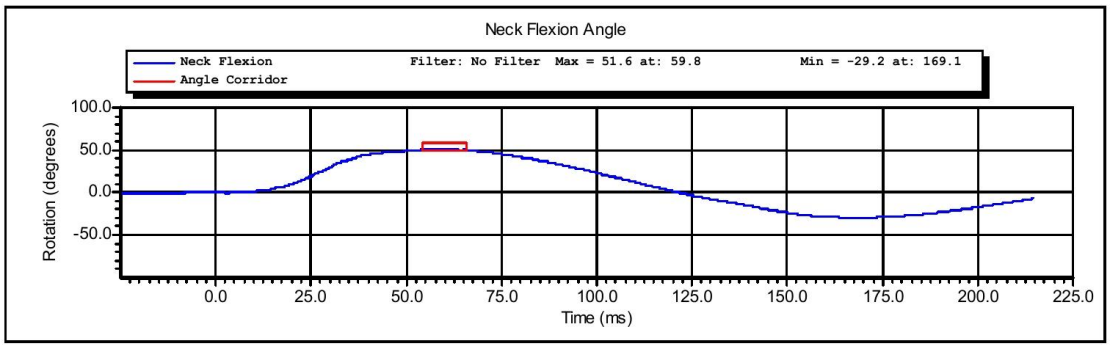
Test Name:	**Neck Flexion**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**8:12:30 AM**





Test Time: **8:12:30 AM** Test Date: **10/3/2012**

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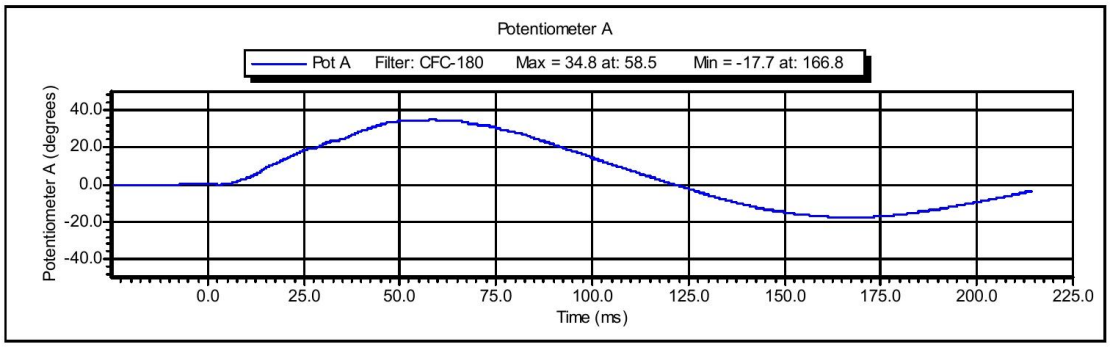

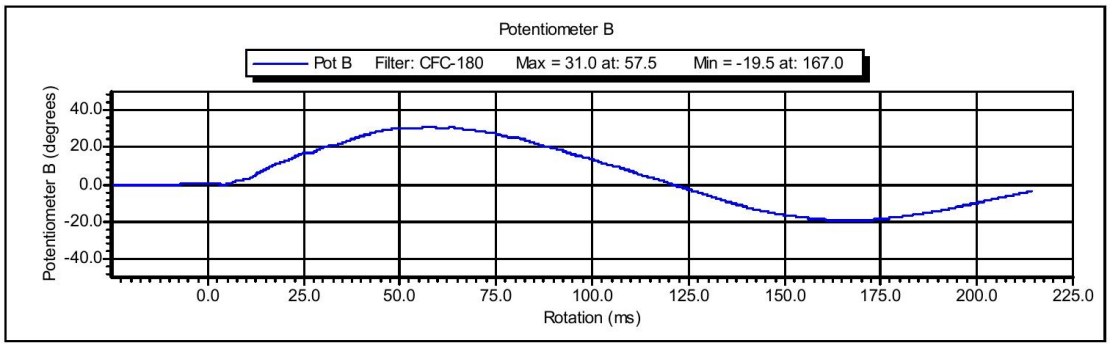

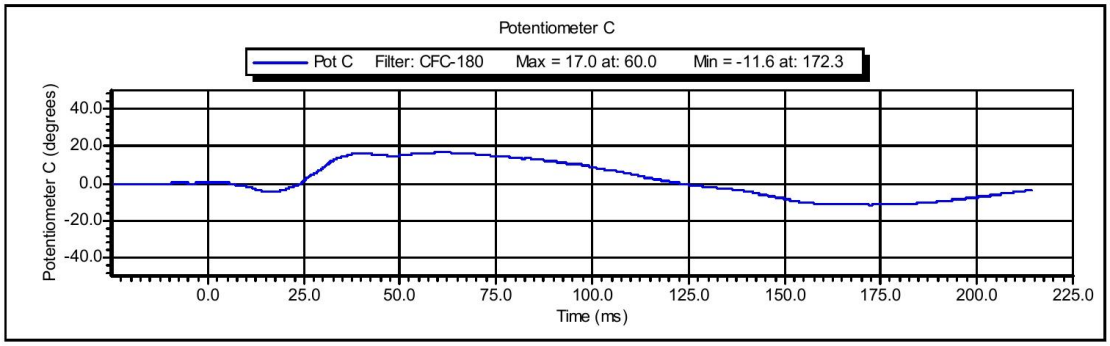

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VERIFICATION REPORT

Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**3**	Test Time:	**4:22:17 PM**

Component Part Number	Component Serial Number

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.1**	deg C	P
Humidity	10.0	--	70.0	**54.4**	%RH	P
Velocity	4.20	--	4.40	**4.25**	m/s	P
Pendulum Acceleration	-10.50	--	-7.50	**-10.46**	g	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **4:22:17 PM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**

Test Time: **4:22:17 PM** Test Date: **10/3/2012**

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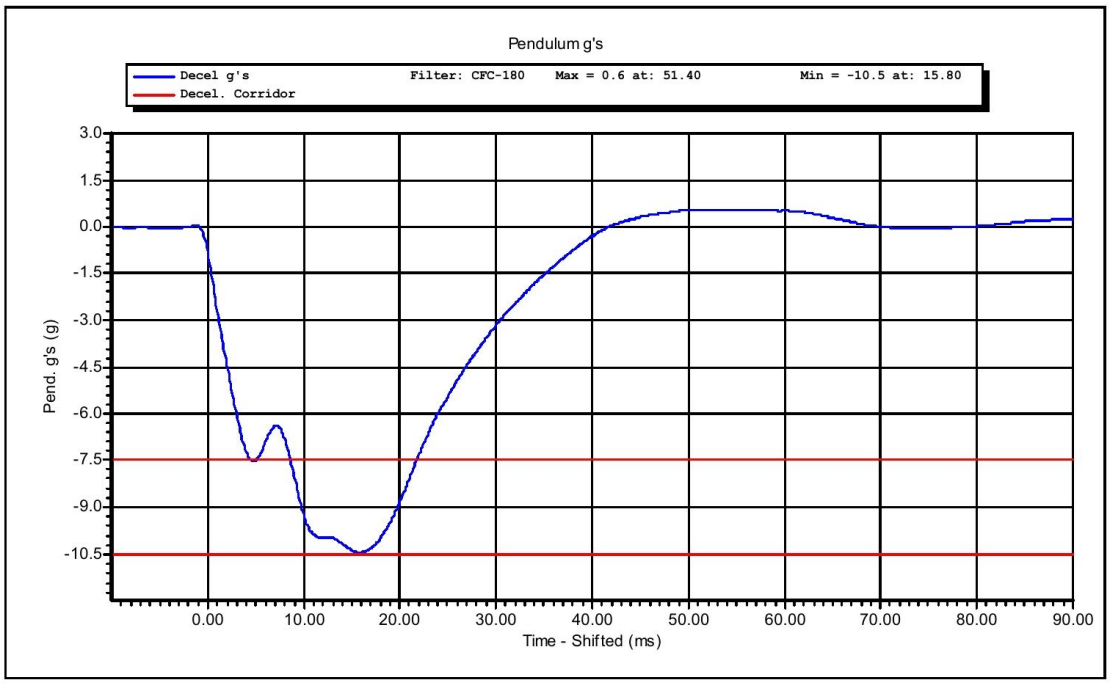
Test Name:	**Shoulder Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**3**	Test Time:	**4:22:17 PM**



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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Upper Rib 4.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:14:51 PM**

Component Part Number	Component Serial Number
455-3100	**07203**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.7**	deg C	P
Humidity	10.0	--	70.0	**48.0**	%RH	P
Velocity	3.90	--	4.10	**3.96**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-46.43**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **3:14:51 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-183**	**5/17/2012**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **3:14:51 PM** Test Date: **10/2/2012**

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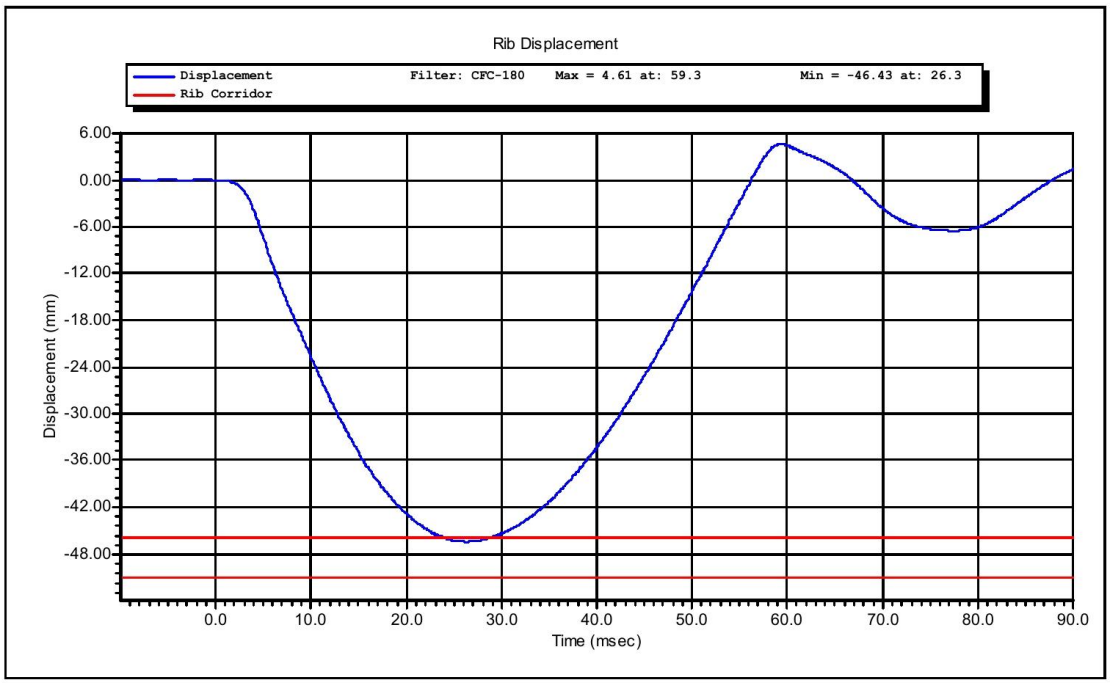
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Upper Rib 4.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:14:51 PM**



Test Time: **3:14:51 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Upper Rib 3.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:28:15 PM**

Component Part Number	Component Serial Number
455-3100	**07203**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.7**	deg C	P
Humidity	10.0	--	70.0	**48.6**	%RH	P
Velocity	2.90	--	3.10	**2.98**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-36.30**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **3:28:15 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-183**	**5/17/2012**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **3:28:15 PM** Test Date: **10/2/2012**

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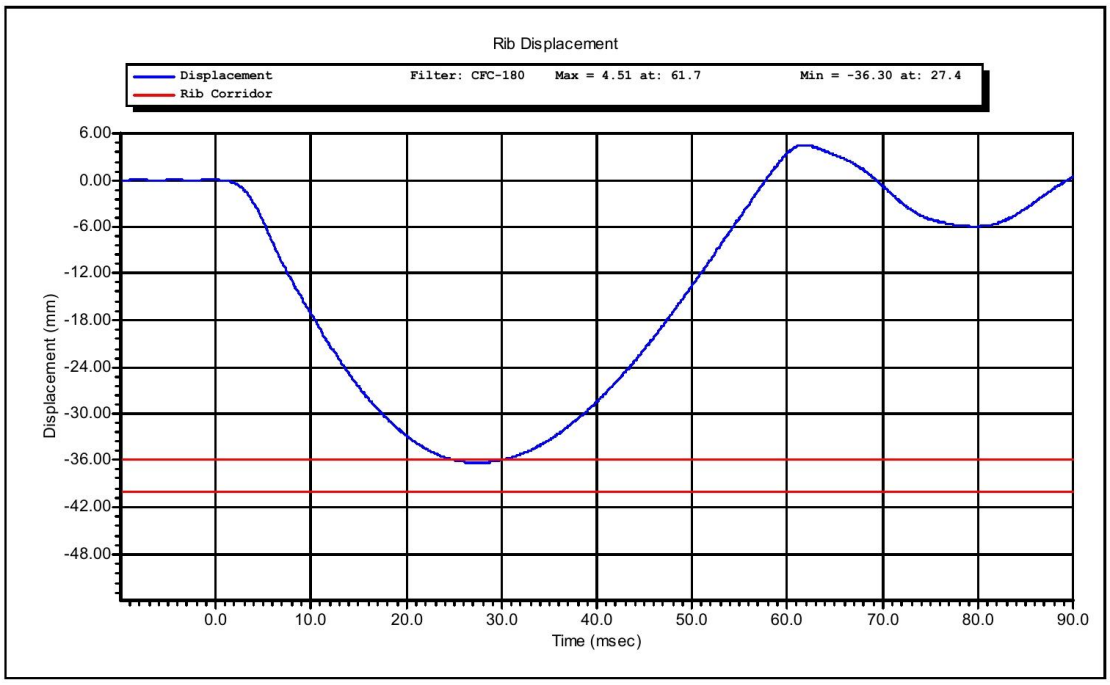
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Upper Rib 3.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:28:15 PM**



Test Time: **3:28:15 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Middle Rib 4.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:36:02 PM**

Component Part Number	Component Serial Number
455-3100	**07205**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.6**	deg C	P
Humidity	10.0	--	70.0	**49.0**	%RH	P
Velocity	3.90	--	4.10	**3.96**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-47.68**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **3:36:02 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-184**	**5/17/2012**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **3:36:02 PM** Test Date: **10/2/2012**

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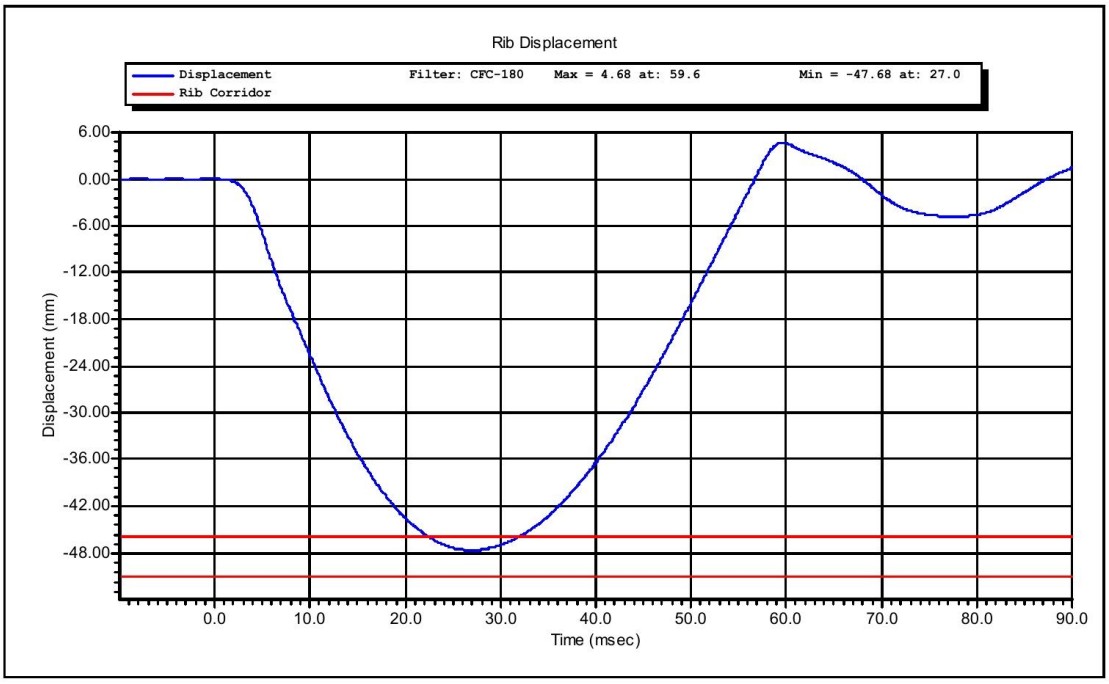
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Middle Rib 4.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:36:02 PM**



Test Time: **3:36:02 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Middle Rib 3.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:49:50 PM**

Component Part Number	Component Serial Number
455-3100	**07205**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.7**	deg C	P
Humidity	10.0	--	70.0	**50.5**	%RH	P
Velocity	2.90	--	3.10	**2.96**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.13**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **3:49:50 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-184**	**5/17/2012**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **3:49:50 PM** Test Date: **10/2/2012**

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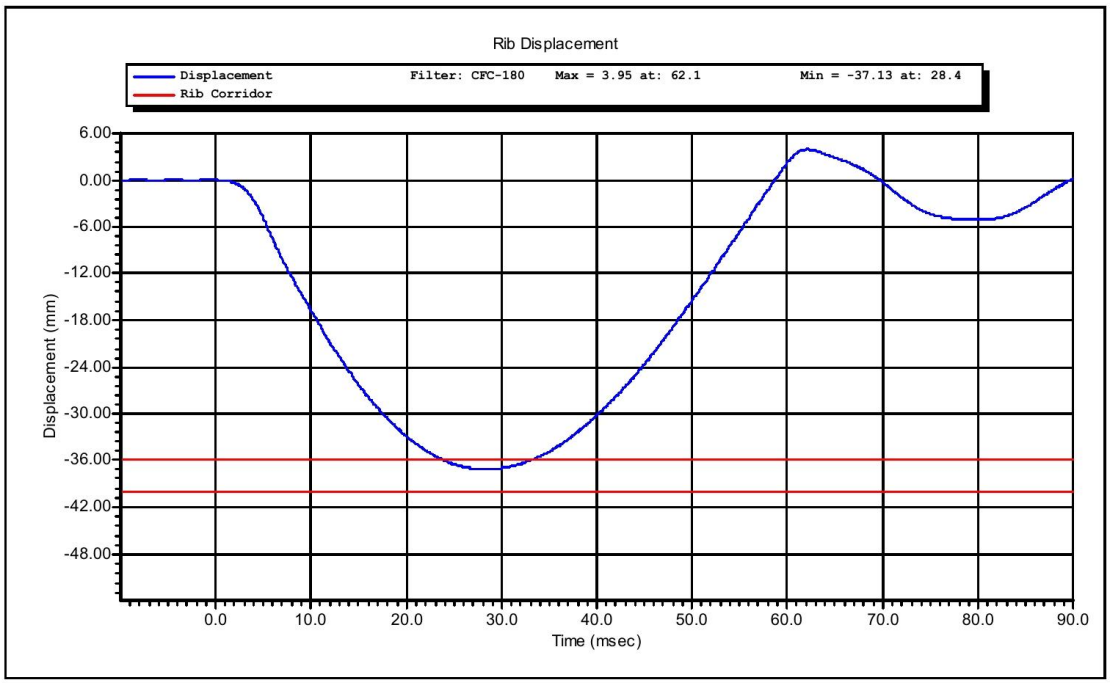
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Middle Rib 3.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:49:50 PM**



Test Time: **3:49:50 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Lower Rib 4.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**4:17:29 PM**

Component Part Number	Component Serial Number
455-3100	**07209**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.5**	deg C	P
Humidity	10.0	--	70.0	**45.0**	%RH	P
Velocity	3.90	--	4.10	**3.95**	m/s	P
Rib Displacement	-51.00	--	-46.00	**-48.42**	mm	P
Drop Height	807.0	--	823.0	**815.0**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **4:17:29 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-182**	**5/17/2012**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **4:17:29 PM** Test Date: **10/2/2012**

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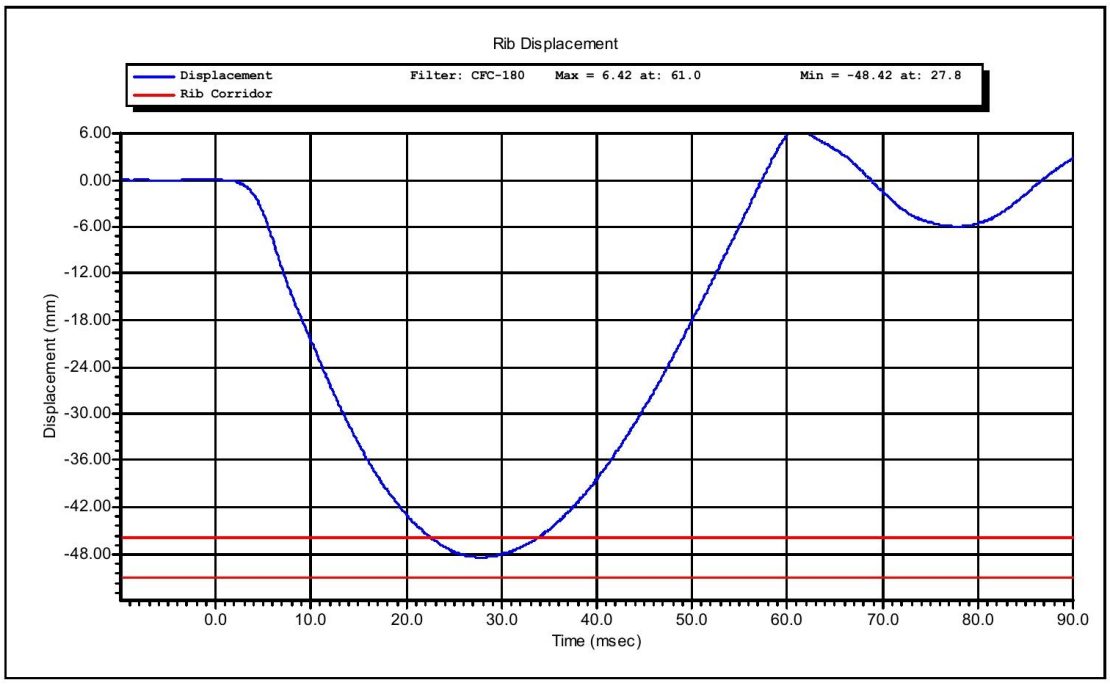
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**4.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Lower Rib 4.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**4:17:29 PM**



Test Time: **4:17:29 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Lower Rib 3.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**4:31:47 PM**

Component Part Number	Component Serial Number
455-3100	**07209**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.5**	deg C	P
Humidity	10.0	--	70.0	**45.5**	%RH	P
Velocity	2.90	--	3.10	**2.96**	m/s	P
Rib Displacement	-40.00	--	-36.00	**-37.53**	mm	P
Drop Height	454	--	464	**459**	mm	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **4:31:47 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Honeywell	**MLT-38000**	**DS-183**	**5/17/2012**
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7264-2000**	**P32222**	**5/23/2012**

Test Time: **4:31:47 PM** Test Date: **10/2/2012**

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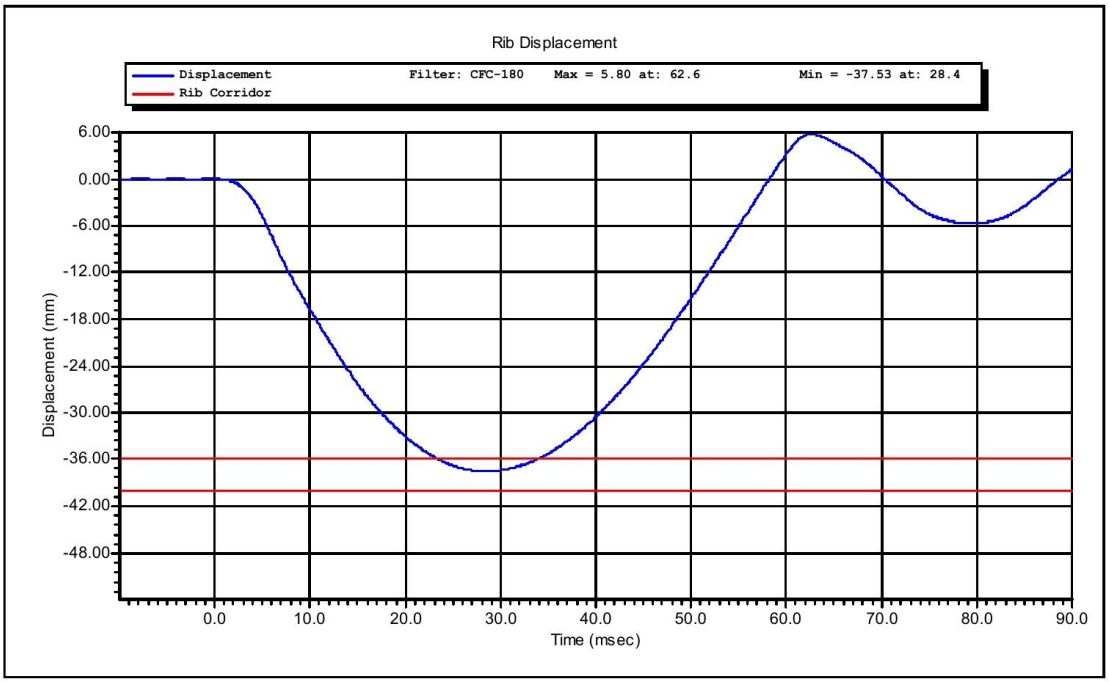
Test Name:	**Full Rib Module Impact**	Revision:	**12/14/2006**
Sub Test Name:	**3.0 Meters/Second**	Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:	**Lower Rib 3.0**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**4:31:47 PM**



Test Time: **4:31:47 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

Test Name:	**Thorax Impact**	Revision:	**8/15/2008**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**2:00:27 PM**

Component Part Number	Component Serial Number
Upper Rib - 175-4002	**07203**
Middle Rib - 175-4002	**07205**
Lower Rib - 175-4002	**07209**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.1**	deg C	P
Humidity	10.0	--	70.0	**54.0**	%RH	P
Velocity	5.40	--	5.60	**5.47**	m/s	P
Upper Rib Displacement	34.0	--	41.0	**37.8**	mm	P
Middle Rib Displacement	37.0	--	45.0	**41.5**	mm	P
Lower Rib Displacement	37.0	--	44.0	**39.9**	mm	P
Impactor Force	5100	--	6200	**5761**	N	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **2:00:27 PM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
Honeywell	**MLT-38000**	**DS-183**	**5/17/2012**
Honeywell	**MLT-38000**	**DS-184**	**5/17/2012**
Honeywell	**MLT-38000**	**DS-182**	**5/17/2012**

Test Time: **2:00:27 PM** Test Date: **10/3/2012**

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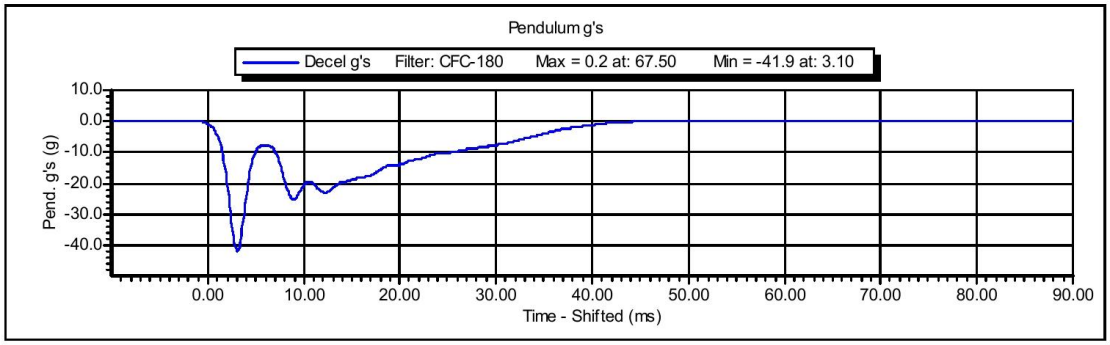
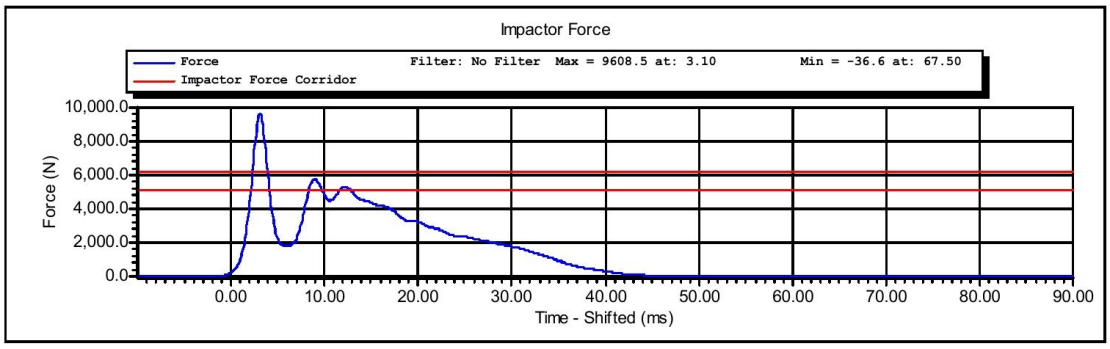
Test Name:	**Thorax Impact**	Revision:	**8/15/2008**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**2:00:27 PM**





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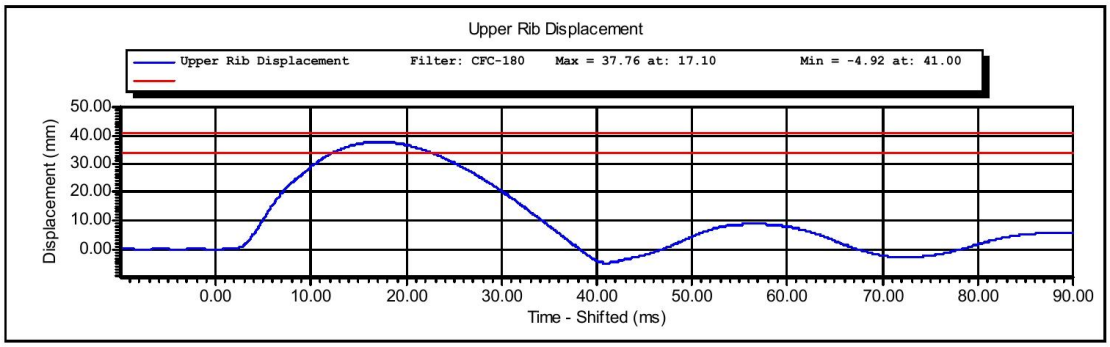

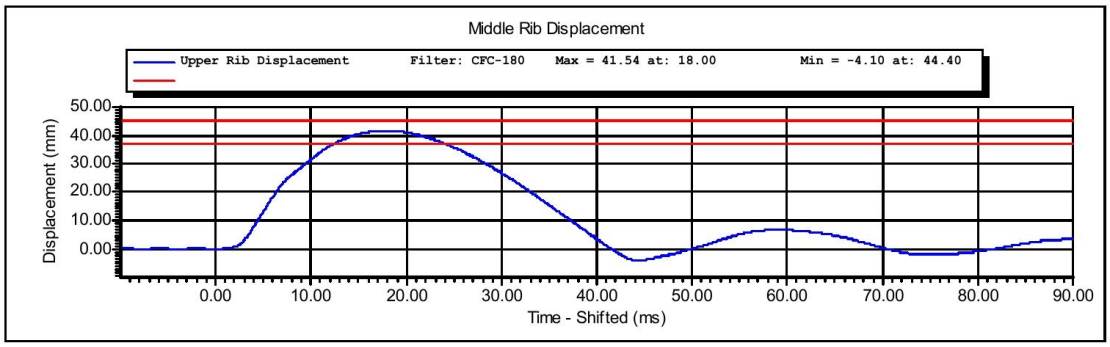

Test Time: **2:00:27 PM** Test Date: **10/3/2012**

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VERIFICATION REPORT

Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**2:34:30 PM**

Component Part Number	Component Serial Number
455-4001	

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.1**	deg C	P
Humidity	10	--	70	**54**	%RH	P
Velocity	3.90	--	4.10	**4.04**	m/s	P
Peak Abdominal Force	-2.70	--	-2.20	**-2.30**	kN	P
Time At Peak Abdominal Force	10.0	--	12.3	**10.8**	ms	P
Maximum Pendulum Force	-4.80	--	-4.00	**-4.63**	kN	P
Time at Peak Pendumlum Force	10.6	--	13.0	**11.7**	ms	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **2:34:30 PM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
Denton	**2631**	**LC-1512**	**5/21/2012**
Denton	**2631**	**LC-1526**	**5/21/2012**
Denton	**2631**	**LC-1516**	**5/21/2012**

Test Time: **2:34:30 PM** Test Date: **10/3/2012**

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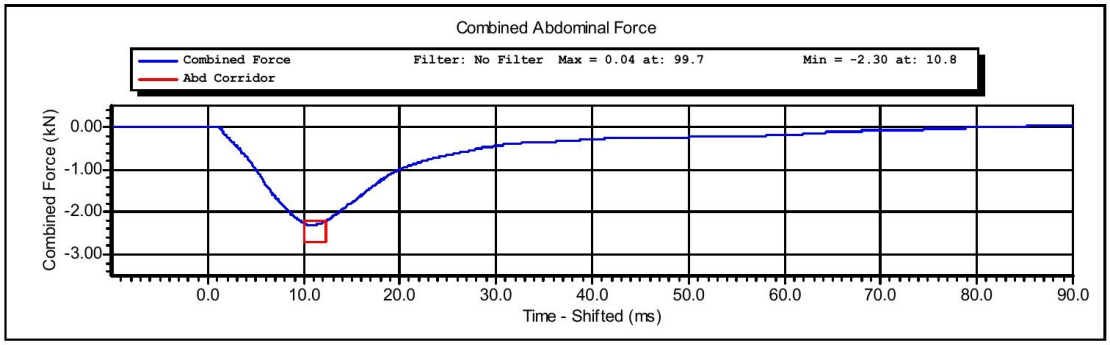
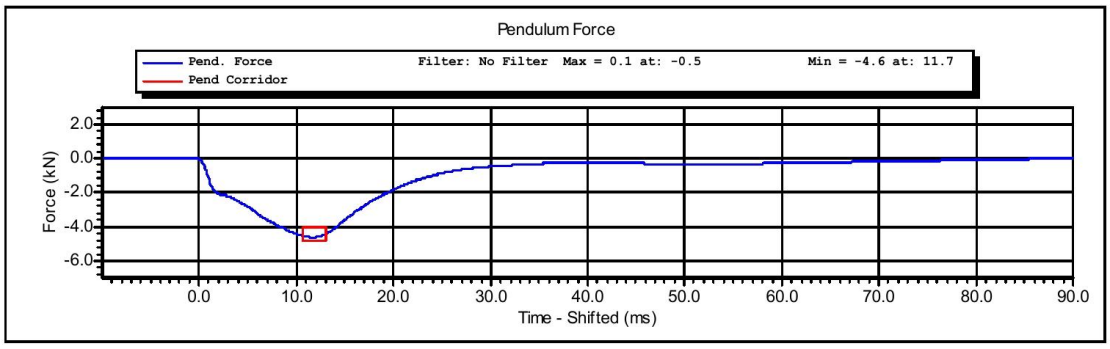
Test Name:	**Abdominal Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**2:34:30 PM**





Test Time: **2:34:30 PM** Test Date: **10/3/2012**

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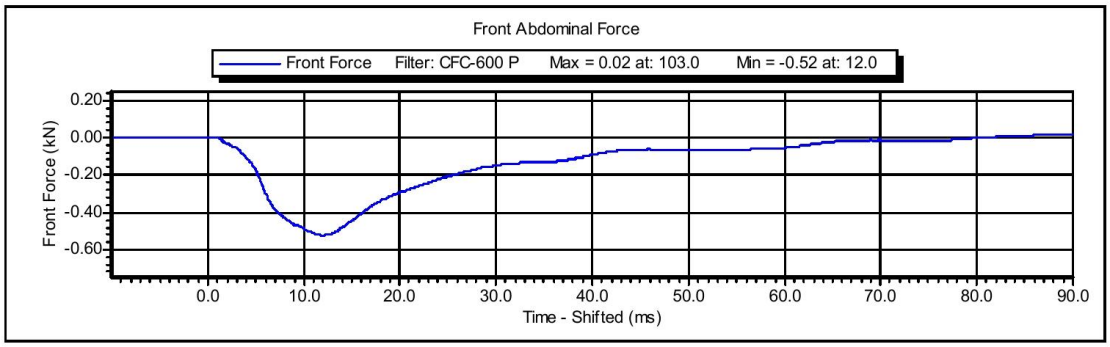

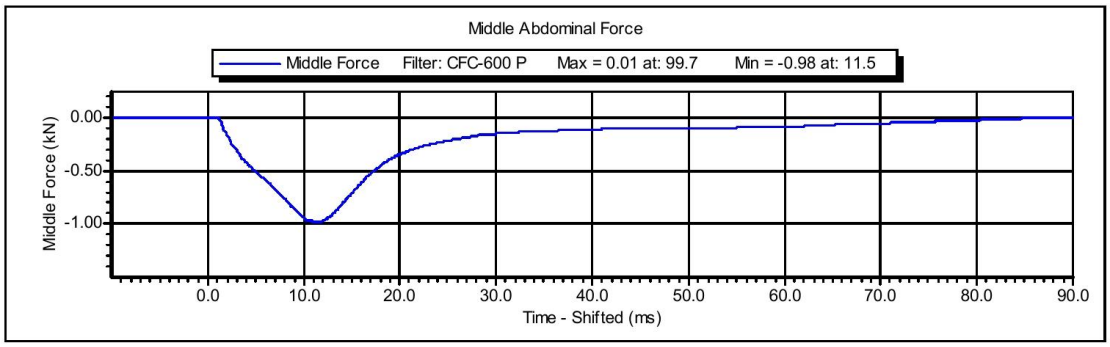

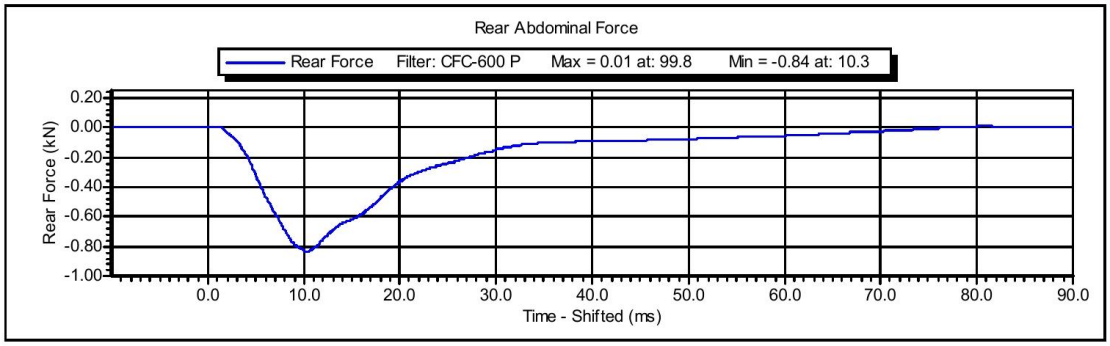

Test Time: **2:34:30 PM** Test Date: **10/3/2012**

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VERIFICATION REPORT

Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/2/2012**
Test Number:	**3**	Test Time:	**2:28:17 PM**

Component Part Number	Component Serial Number
175-5501	**DI8371**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10	--	70	**50**	%RH	P
Velocity	5.95	--	6.15	**6.15**	m/s	P
Maximum Headform Flexion Angle	45.0	--	55.0	**46.8**	degrees	P
Time at Maximum Headform Flexion Angle	39.0	--	53.0	**45.8**	ms	P
Decay to Zero Degrees	37.0	--	57.0	**38.2**	ms	P
Velocity Corridor		--				P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **2:28:17 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C15016**	**8/15/2012**
DentonATD	**7000428**	**094**	**5/30/2012**
DentonATD	**7000428**	**095**	**5/30/2012**
DentonATD	**7000428**	**093**	**5/30/2012**

Test Time: **2:28:17 PM** Test Date: **10/2/2012**

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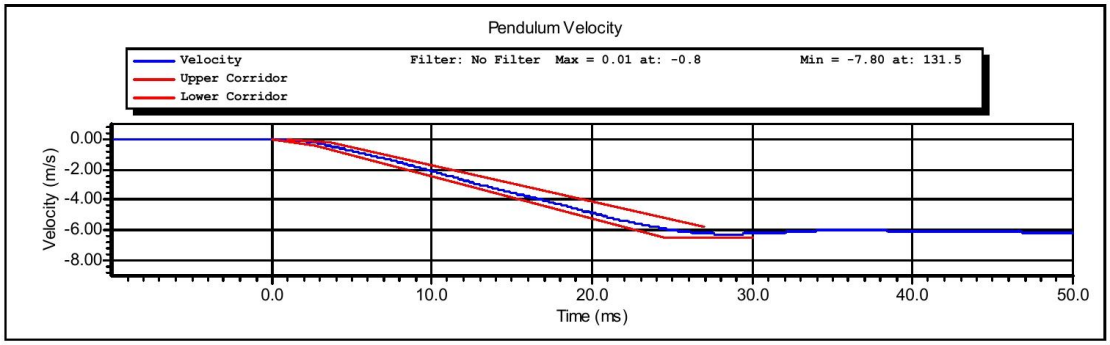
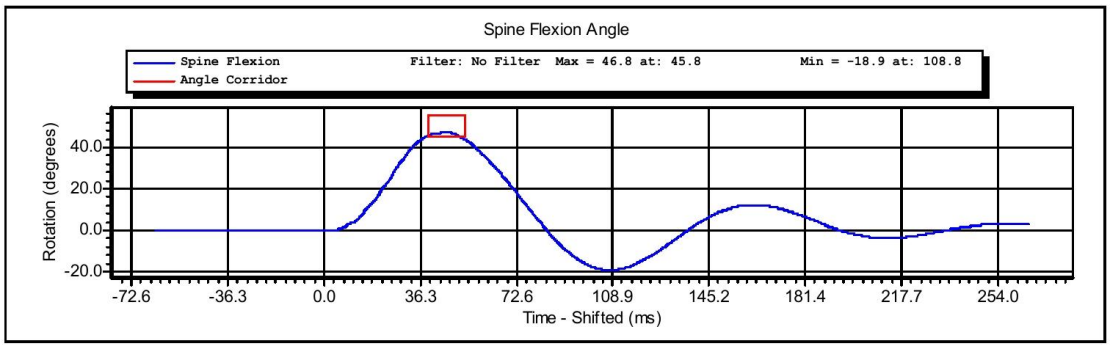
Test Name:	**Lumbar Spine**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/2/2012**
Test Number:	**3**	Test Time:	**2:28:17 PM**





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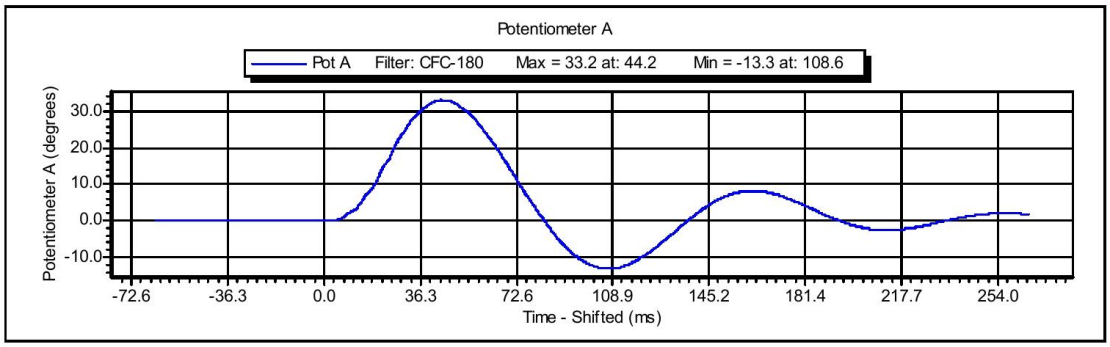

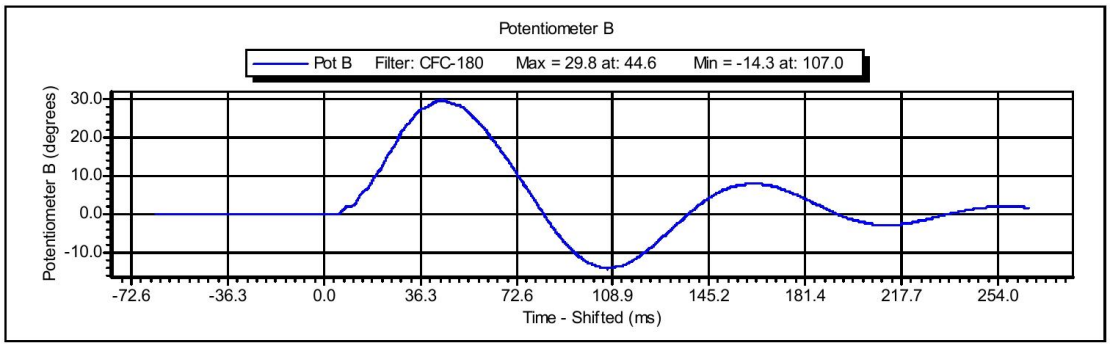

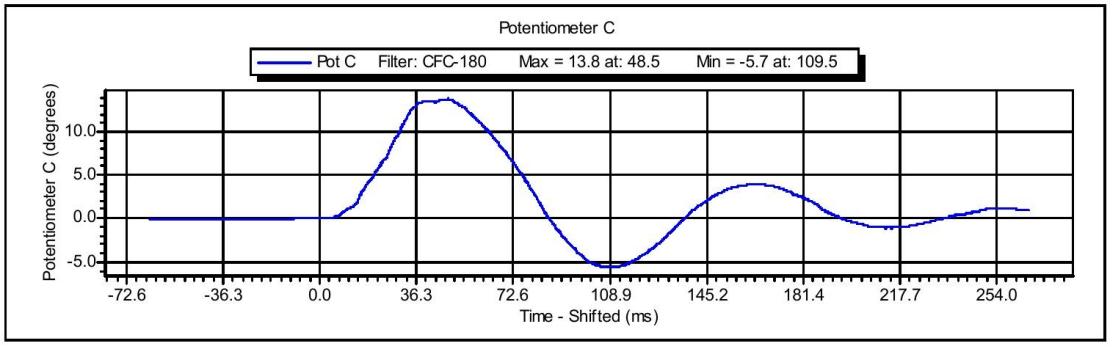

Test Time: **2:28:17 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**2:56:30 PM**

Component Part Number	Component Serial Number
455-4003	

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10	--	70	**56**	%RH	P
Velocity	4.20	--	4.40	**4.34**	m/s	P
Peak Pendulum Force	-5.40	--	-4.70	**-4.97**	kN	P
Time at Peak Pendulum Force	11.80	--	16.10	**14.32**	ms	P
Peak Pubic Symphysis Force	-1.59	--	-1.23	**-1.35**	kN	P
Time at Peak Pubic Symphysis Force	12.20	--	17.00	**15.82**	ms	P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test Time: **2:56:30 PM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
Denton	**3096**	**LC-465Fy**	**5/21/2012**

Test Time: **2:56:30 PM** Test Date: **10/3/2012**

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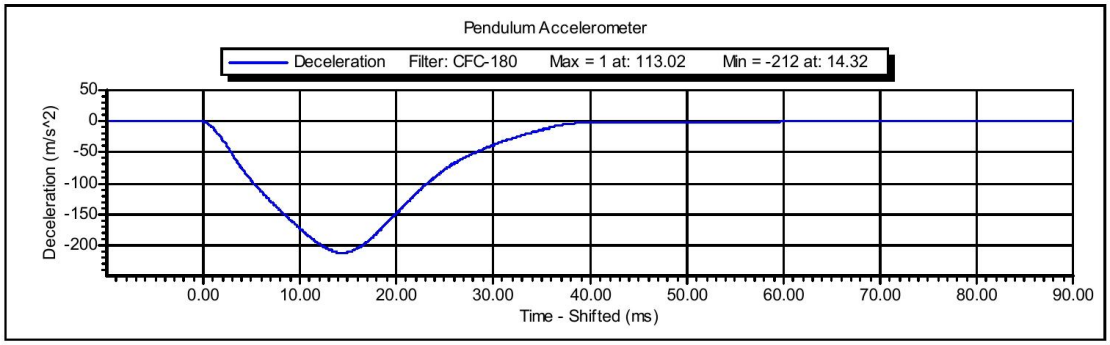
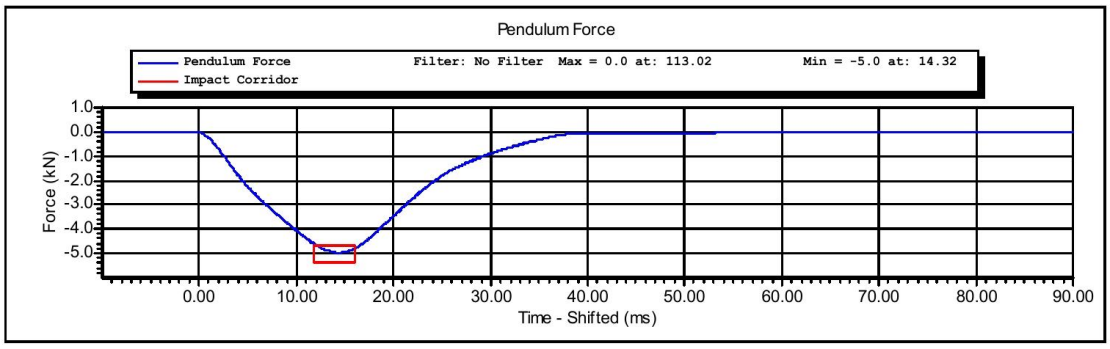
Test Name:	**Pelvis Impact**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**ES-2re**		
ATD Serial Number:	**F034**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**2:56:30 PM**





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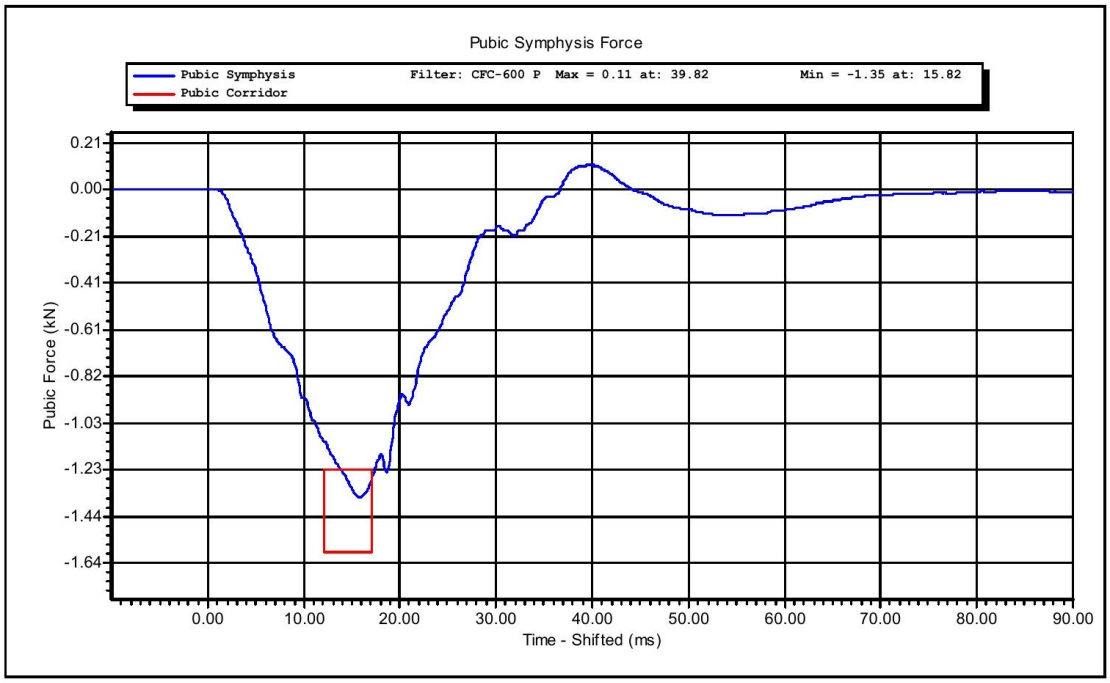

Test Time: **2:56:30 PM** Test Date: **10/3/2012**

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CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - PASSENGER ATD

SERIAL No: 8012

(CONFIGURED FOR LEFT SIDE IMPACT)

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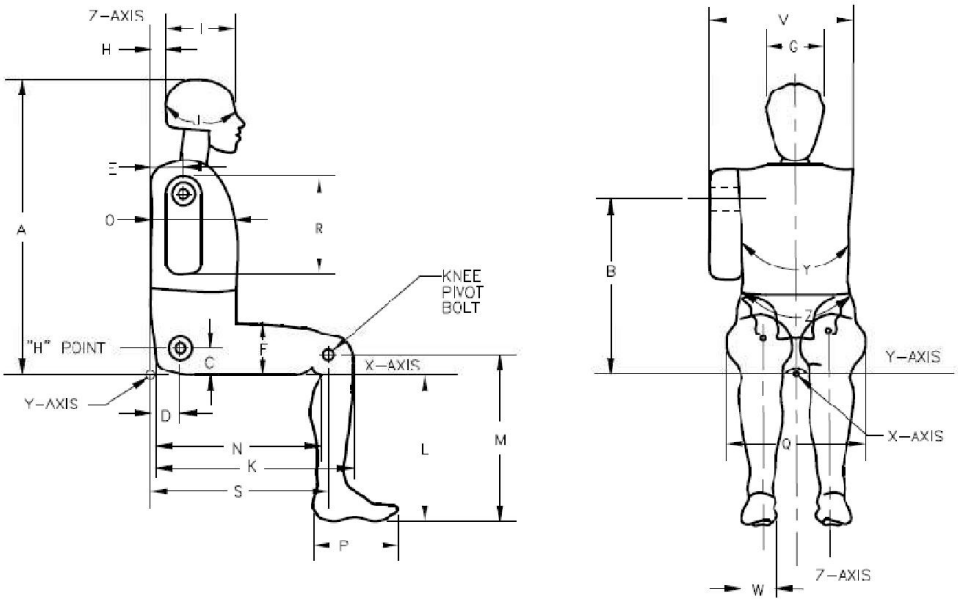
SID-IIsD External Measurements

NHTSA ATD S/N DG8012

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	782	Yes
B	Shoulder Pivot Height	437.0 - 453.0	443	Yes
C	H-Point Height	79.0 - 89.0	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	101	Yes
F	Thigh Clearance	119.0 - 135.0	127	Yes
G	Head Breadth	140.0 - 148.0	144	Yes
H	Head Back from Backline	40.0 - 46.0	43	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	545	Yes
K	Buttock to Knee Length	514.0 - 540.0	530	Yes
L	Popliteal Height	343.0 - 369.0	346	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	397	Yes
N	Buttock Popliteal Length	416.0 - 442.0	431	Yes
O	Chest Depth without Jacket	195.0 - 211.0	205	Yes
P	Foot Length (right)	216.0 - 232.0	222	Yes
Q	Hip Breadth	313.0 - 323.0	319	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to Seat back	478.0 - 493.0	482	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	350	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	866	Yes
Z	Waist Circumference	761.0 - 791.0	766	Yes

Technician : M. Goehle 10/3/2012

SID-IIsD External Dimension Reference Diagram



SIDE VIEW

FRONT VIEW

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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:	**Head Drop**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:27:56 PM**

Component Part Number	Component Serial Number
Head Skin - 180-1002	**1362**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.0**	deg C	P
Humidity	10	--	70	**53**	%RH	P
Resultant Acceleration	115.0	--	137.0	**121.9**	g	P
Oscillation	0.0	--	15.0	**1.4**	%	P
Fore-Aft Acceleration	-15.0	--	15.0	**-5.1**	g	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **3:27:56 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P49185**	**5/18/2012**
Endevco	**7264-2000**	**P51949**	**5/17/2012**
Endevco	**7264-2000**	**P51991**	**5/18/2012**

Test Time: **3:27:56 PM** Test Date: **10/2/2012**

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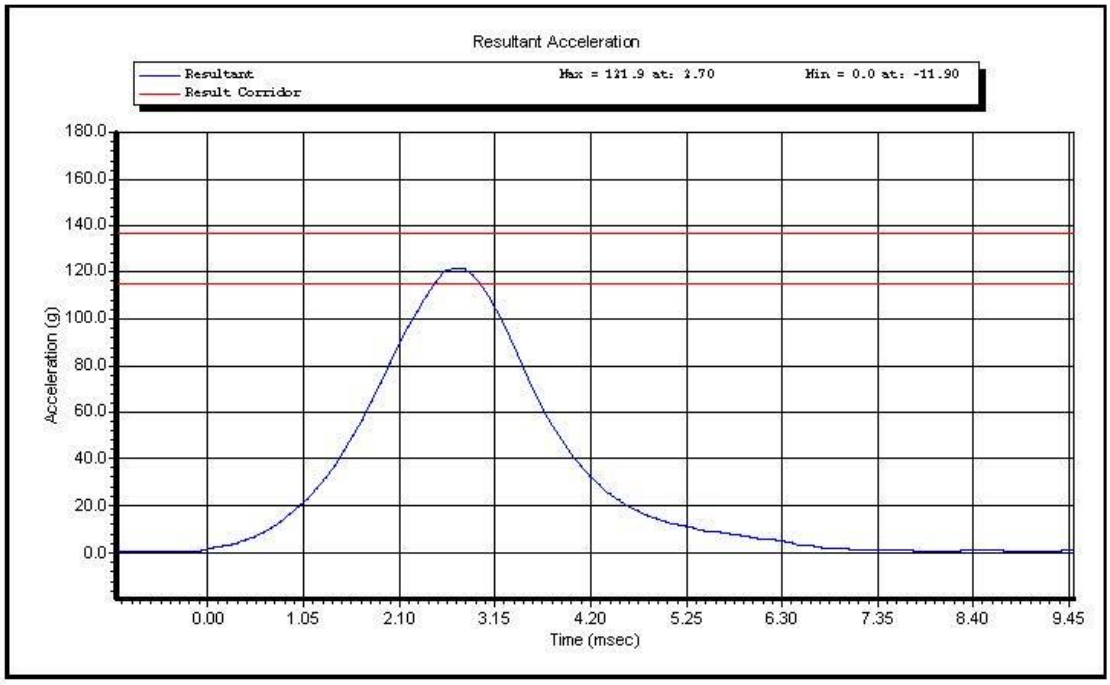
Test Name:	**Head Drop**	Revision:	**12/14/2006**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:	**Head Drop**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**3:27:56 PM**



Test Time: **3:27:56 PM** Test Date: **10/2/2012**

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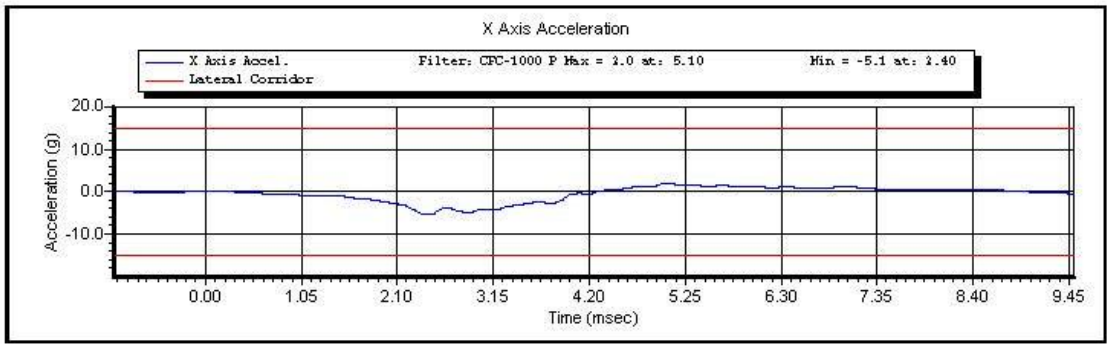

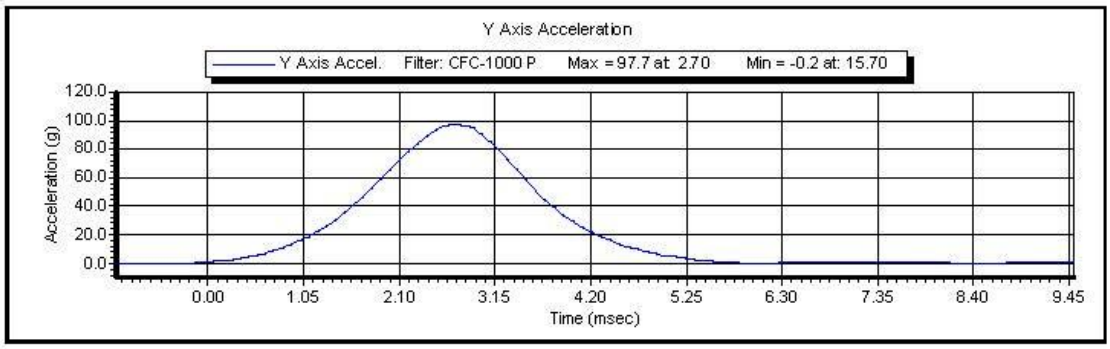

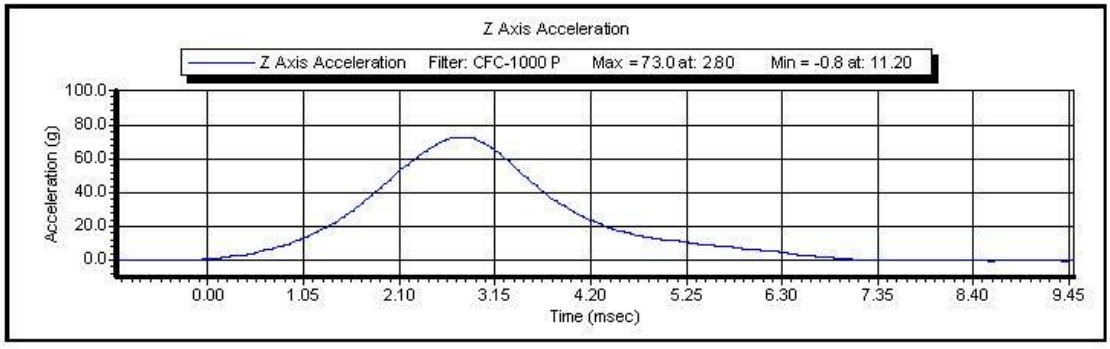

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VERIFICATION REPORT

Test Name:	**Neck Pendulum**	Revision:	**8/24/2009**
Sub Test Name:	**Left Side**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:	**Neck Flexion**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**4:16:54 PM**

Component Part Number	Component Serial Number
Neck - 180-2000	**DG7061**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.8**	deg C	P
Humidity	10	--	70	**54**	%RH	P
Velocity	5.51	--	5.63	**5.60**	m/s	P
Pendulum Impulse at 10 ms	2.20	--	2.80	**2.31**	m/s	P
Pendulum Impulse at 15 ms	3.30	--	4.10	**3.42**	m/s	P
Pendulum Impulse at 20 ms	4.40	--	5.40	**4.69**	m/s	P
Pendulum Impulse at 25 ms	5.40	--	6.10	**5.57**	m/s	P
Pendulum Impulse between 25 and 100 ms	5.50	--	6.20	**5.67**	m/s	P
Max D Plane Rotation	71.0	--	81.0	**74.4**	degrees	P
Time at Max Rotation	50.0	--	70.0	**64.9**	ms	P
Moment about OC	-44.0	--	-36.0	**-39.1**	Nm	P
Moment Decay to Zero	102.0	--	126.0	**118.3**	ms	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **4:16:54 PM** Test Date: **10/2/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C15016**	**8/15/2012**
Denton	**1716A**	**LC-2192Fy**	**5/21/2012**
Denton	**1716A**	**LC-2192Mx**	**5/21/2012**
DentonATD	**78051-342**	**184**	**5/30/2012**
DentonATD	**78051-342**	**174**	**5/30/2012**
DentonATD	**78051-342**	**185**	**5/30/2012**

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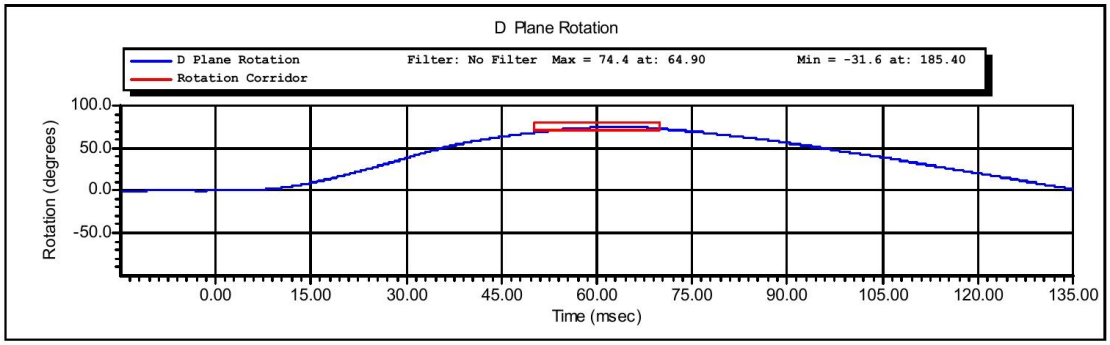
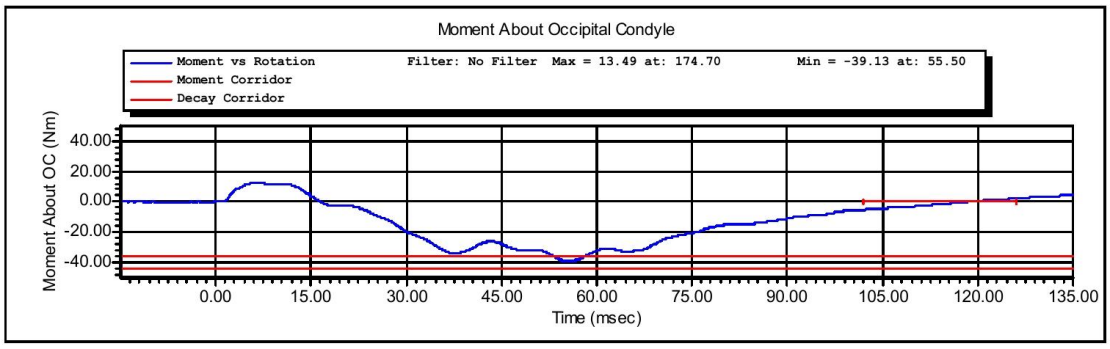
Test Name:	**Neck Pendulum**	Revision:	**8/24/2009**
Sub Test Name:	**Left Side**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:	**Neck Flexion**	Test Date:	**10/2/2012**
Test Number:	**1**	Test Time:	**4:16:54 PM**





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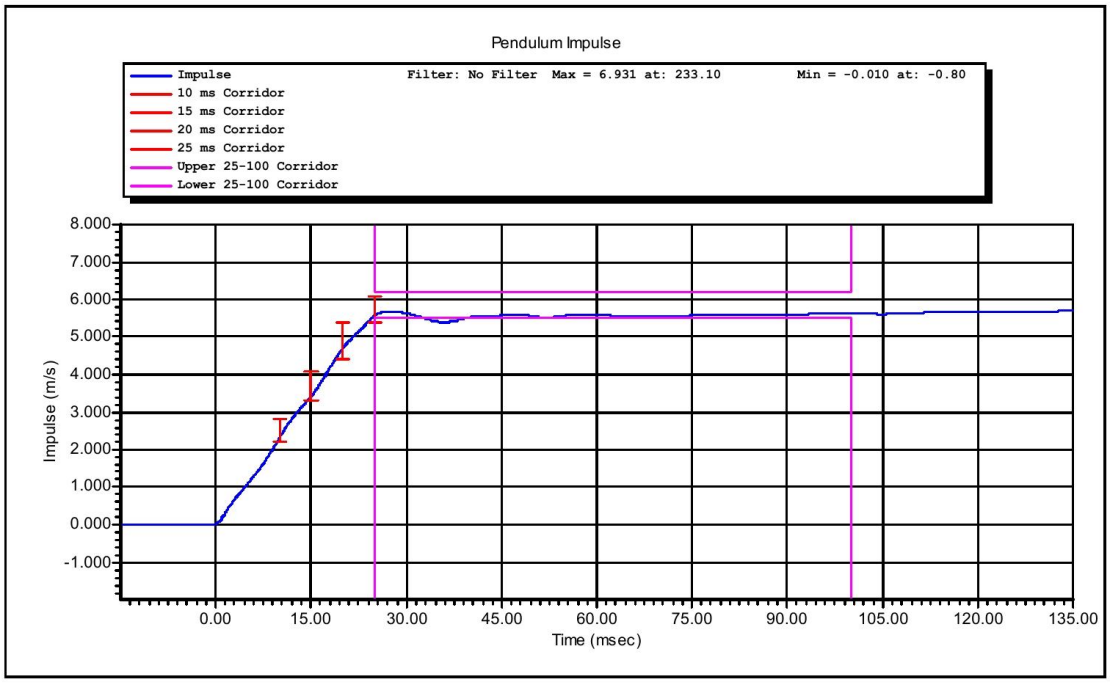

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VERIFICATION REPORT

Test Name:	**Shoulder Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:	**Shoulder Impact**	Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**9:11:27 AM**

Component Part Number	Component Serial Number
Left Arm 180-6011-1	**1012**
Shoulder Rib 180-3355	**286**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.70**	deg C	P
Humidity	10.0	--	70.0	**55.0**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Probe Acceleration	13.0	--	18.0	**15.5**	g	P
Shoulder Deflection	28.0	--	37.0	**28.0**	mm	P
T1 Acceleration	17.0	--	22.0	**20.5**	g	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **9:11:27 AM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
FTSS	**180-3881-1**	**DS-1845**	**5/17/2012**
Endevco	**7264-2000**	**P51875**	**5/17/2012**

Test Time: **9:11:27 AM** Test Date: **10/3/2012**

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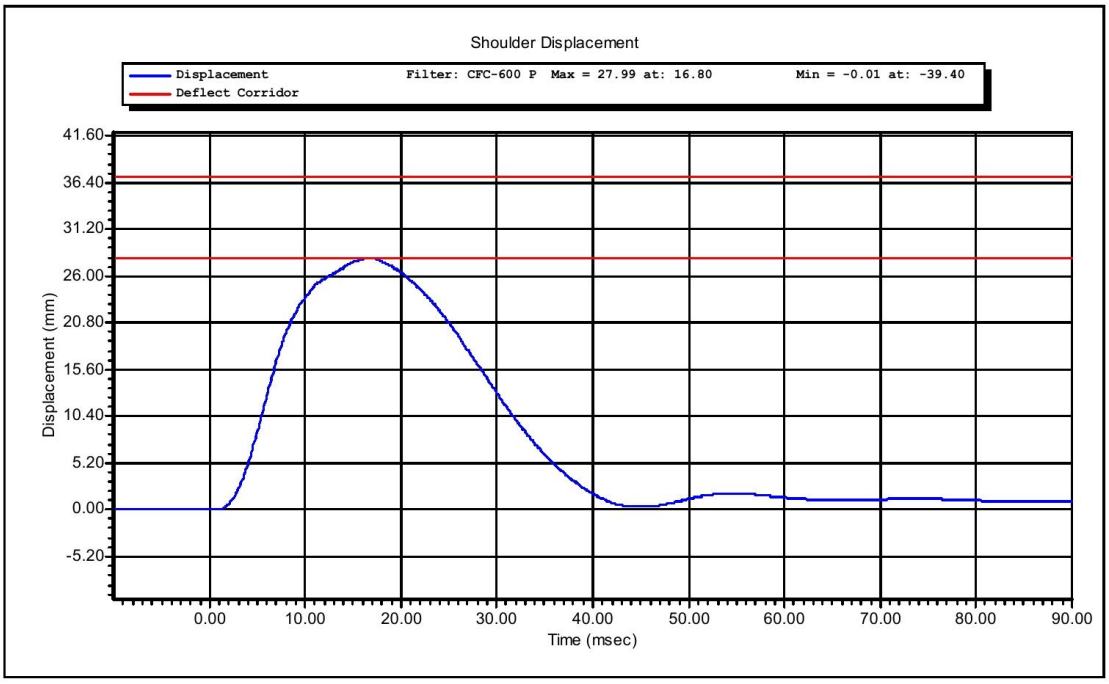
Test Name:	**Shoulder Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:	**Shoulder Impact**	Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**9:11:27 AM**



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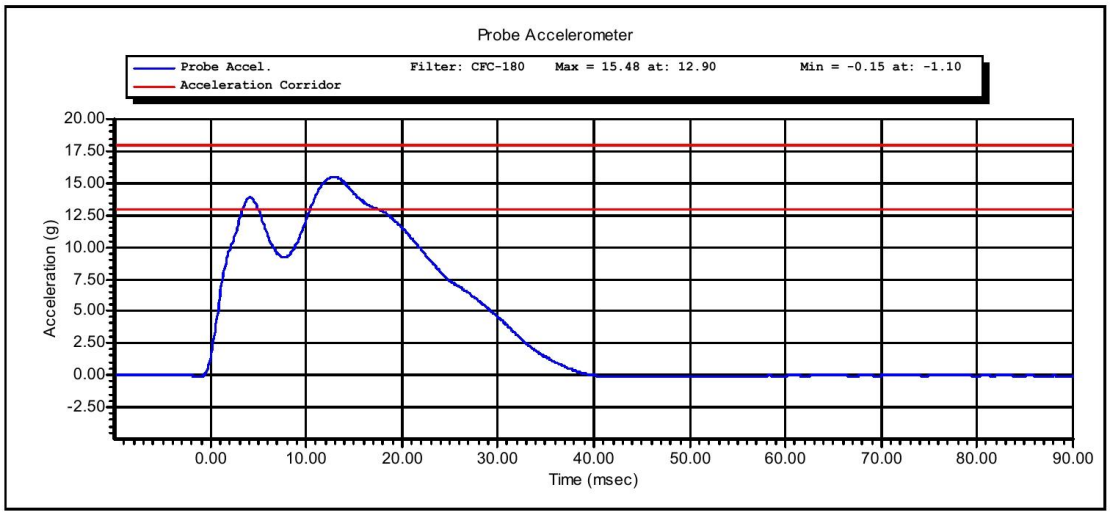

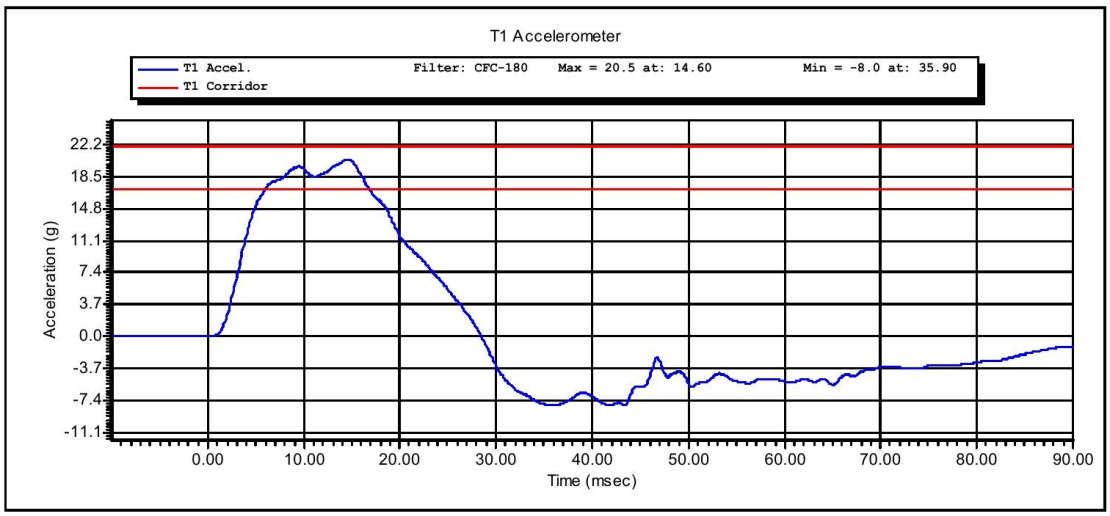

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VERIFICATION REPORT

Test Name:	**Thorax Impact without Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**8:59:32 AM**

Component Part Number	Component Serial Number
Thorax Ribs 1, 2, 3 180-3362	**DG6080, DG6081, DG7543**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.7**	deg C	P
Humidity	10	--	70	**56**	%RH	P
Velocity	4.20	--	4.40	**4.33**	m/s	P
Probe Acceleration	14.0	--	18.0	**16.3**	g	P
Upper Thorax Rib Deflection	32.0	--	40.0	**35.6**	mm	P
Mid Thorax Rib Deflection	39.0	--	45.0	**41.9**	mm	P
Lower Thorax Rib Deflection	35.0	--	43.0	**39.3**	mm	P
Upper Spine Acceleration T1	13.0	--	17.0	**15.7**	g	P
Lower Spine Acceleration T12	7.0	--	11.0	**9.4**	g	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **8:59:32 AM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
FTSS	**180-3881-1**	**DS-1849**	**5/16/2012**
Servo	**180-3881-1**	**DS-1514**	**5/16/2012**
FTSS	**180-3881-1**	**DS-1859**	**5/16/2012**
Endevco	**7264-2000**	**P51875**	**5/17/2012**
Endevco	**7264-2000**	**P58796**	**5/17/2012**

Test Time: **8:59:32 AM** Test Date: **10/3/2012**

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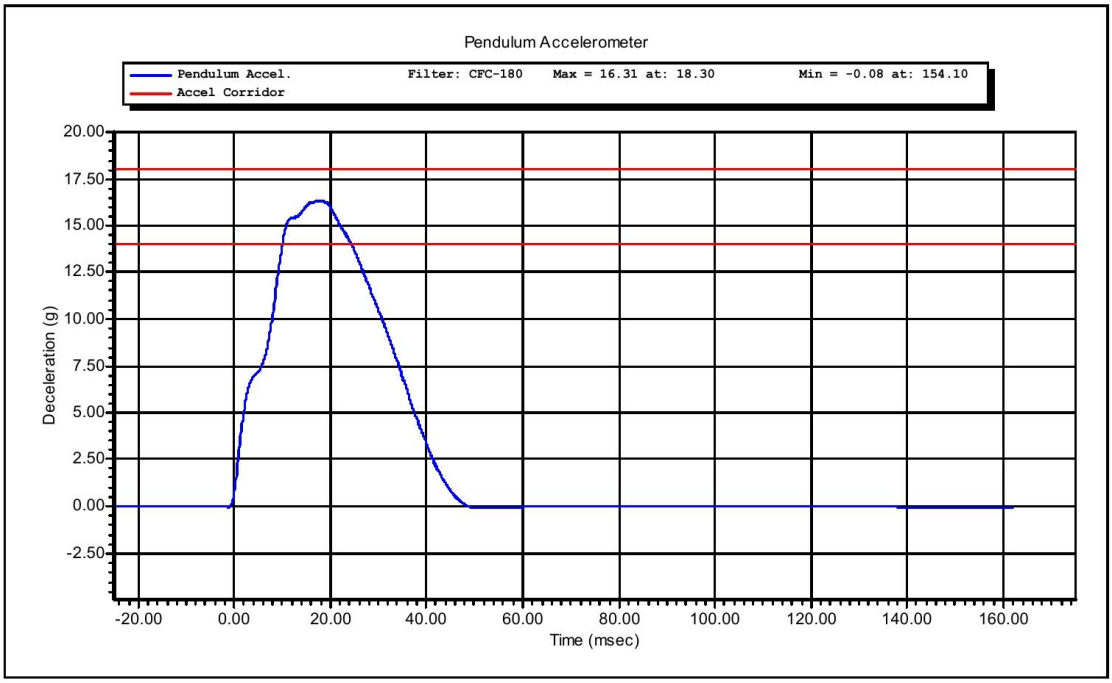
Test Name:	**Thorax Impact without Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**8:59:32 AM**



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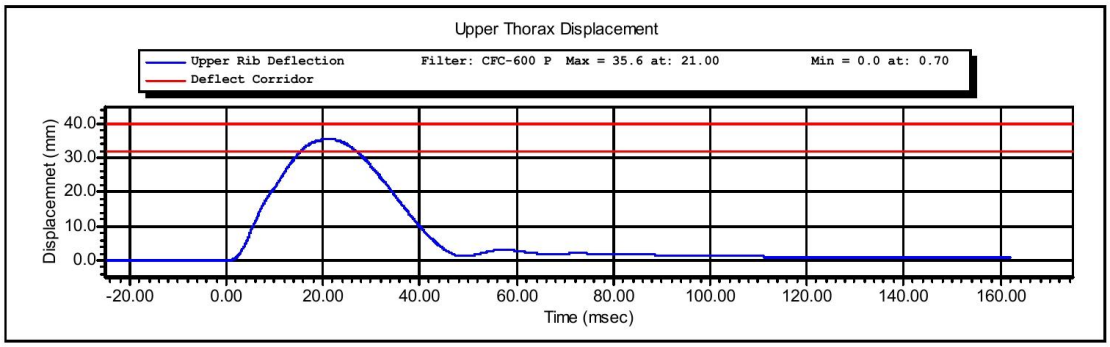

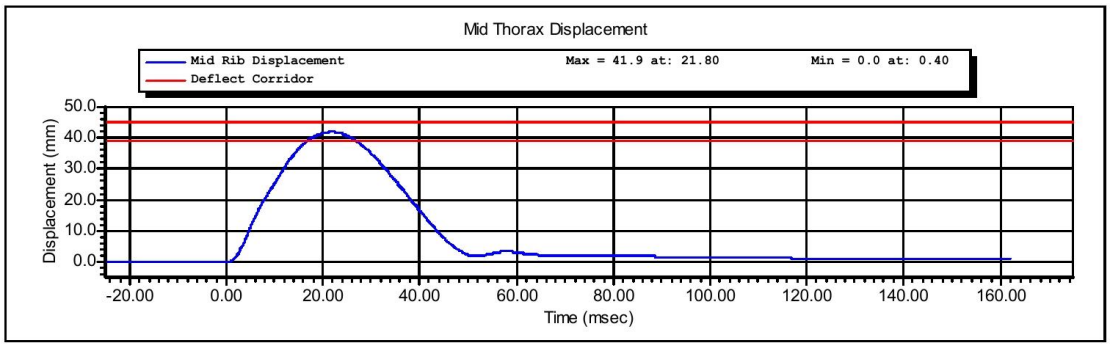

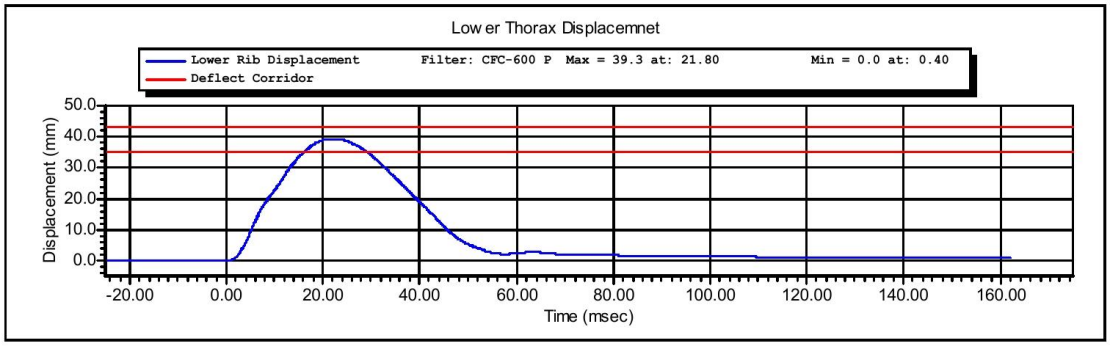

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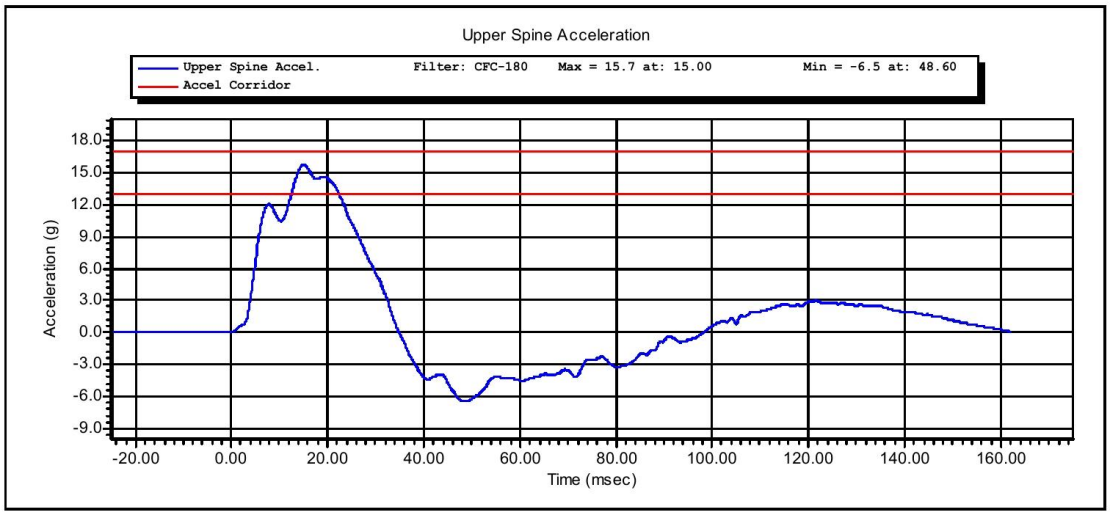

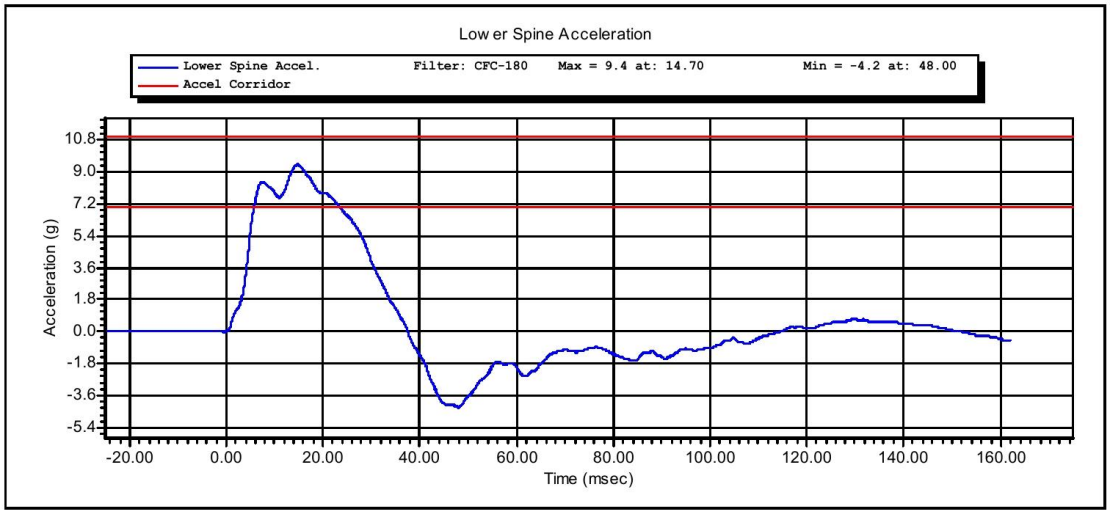

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VERIFICATION REPORT

Test Name:	**Thorax Impact with Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**9:26:47 AM**

Component Part Number	Component Serial Number
Thorax Ribs 1, 2, 3 180-3362	**DG6080, DG6081, DG7543**
Shoulder Rib 180-3355	**286**
Left Arm 180-6011-1	**1012**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.7**	deg C	P
Humidity	10	--	70	**54**	%RH	P
Velocity	6.60	--	6.80	**6.70**	m/s	P
Probe Acceleration after 5ms	30.0	--	36.0	**32.9**	g	P
Upper Thorax Rib Deflection	25.0	--	32.0	**26.4**	mm	P
Mid Thorax Rib Deflection	30.0	--	36.0	**32.0**	mm	P
Lower Thorax Rib Deflection	32.0	--	38.0	**34.6**	mm	P
Upper Spine Acceleration ("y")	34.0	--	43.0	**40.8**	g	P
Lower Spine Acceleration ("y")	29.0	--	37.0	**32.2**	g	P
Shoulder Deflection	31.0	--	40.0	**32.2**	mm	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **9:26:47 AM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
FTSS	**180-3881-1**	**DS-1849**	**5/16/2012**
Servo	**180-3881-1**	**DS-1514**	**5/16/2012**
FTSS	**180-3881-1**	**DS-1859**	**5/16/2012**
Endevco	**7264-2000**	**P51875**	**5/17/2012**
Endevco	**7264-2000**	**P58796**	**5/17/2012**
FTSS	**180-3881-1**	**DS-1845**	**5/17/2012**

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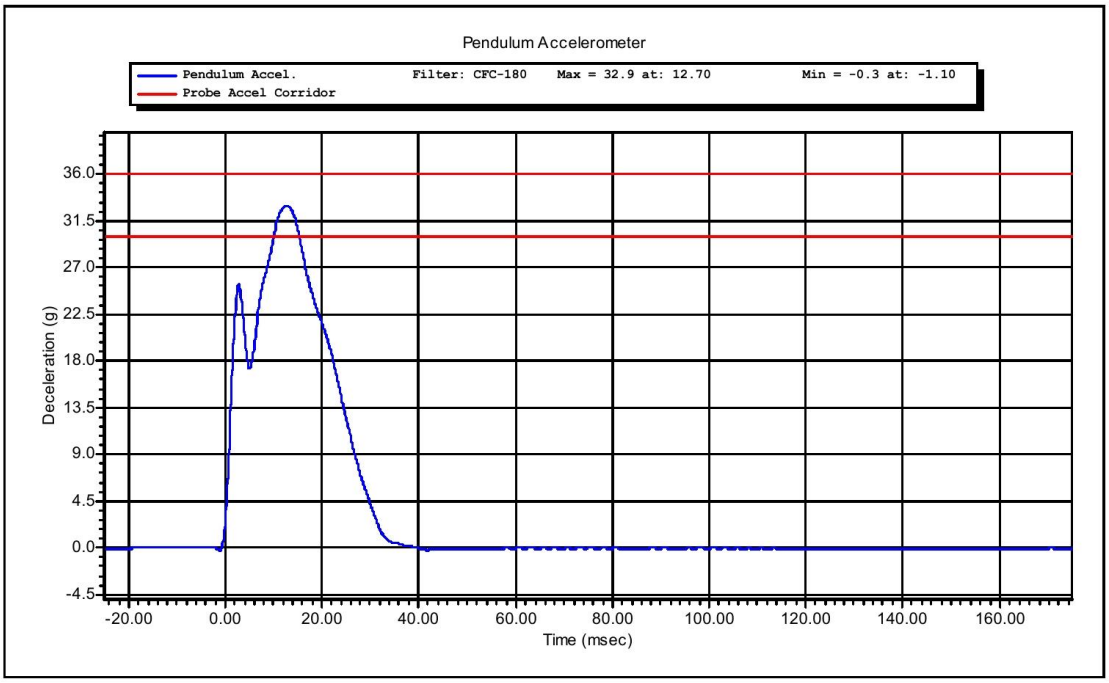
Test Name:	**Thorax Impact with Arm**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**9:26:47 AM**



Test Time: **9:26:47 AM** Test Date: **10/3/2012**

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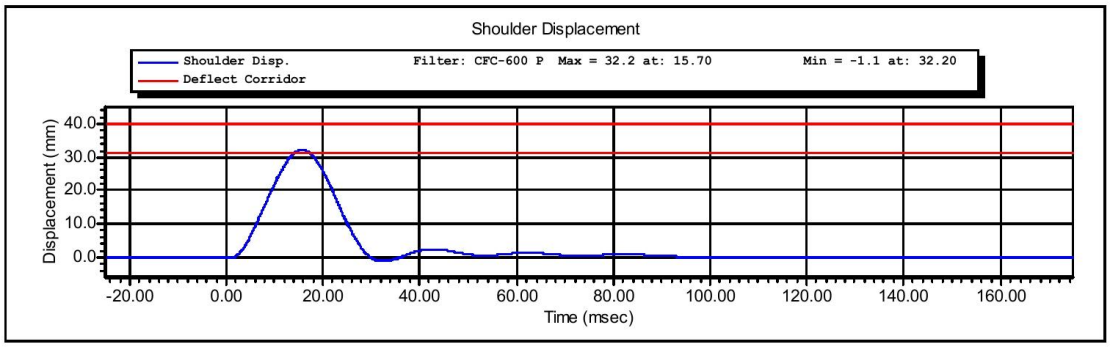

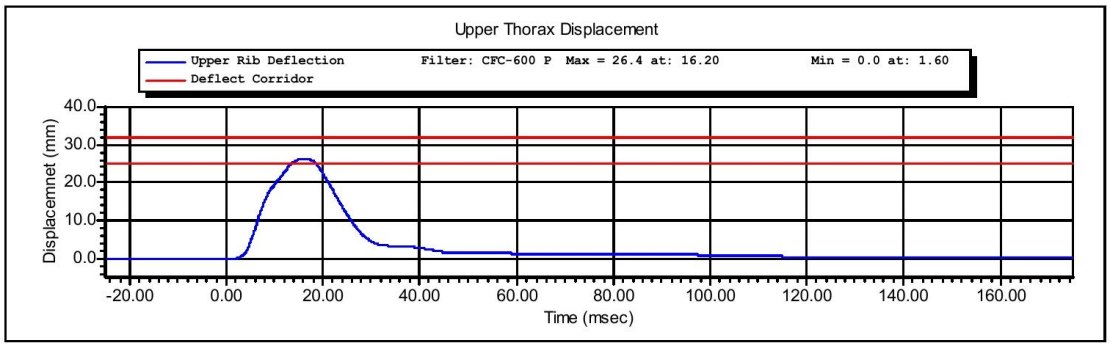

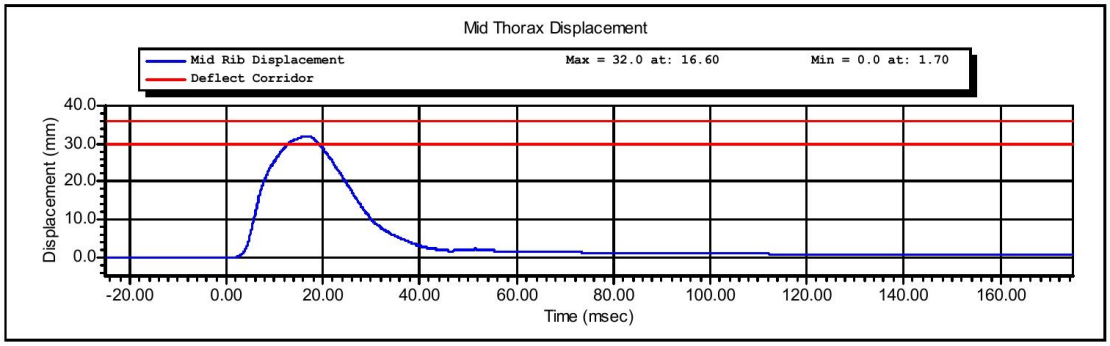

Test Time: **9:26:47 AM** Test Date: **10/3/2012**

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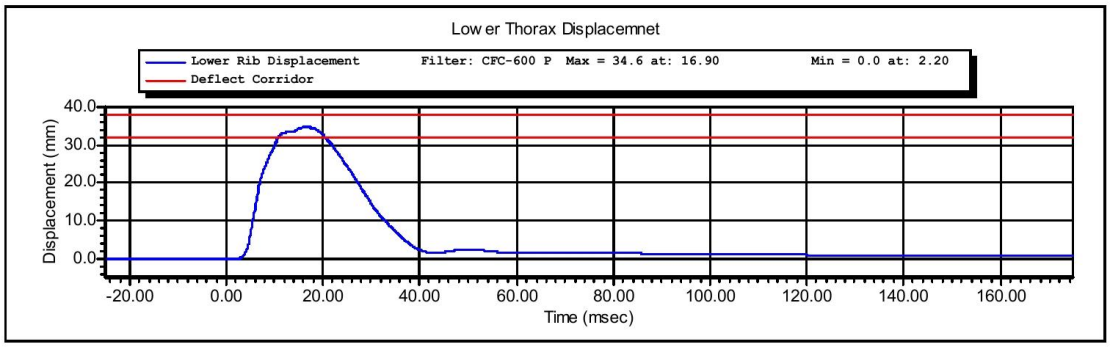

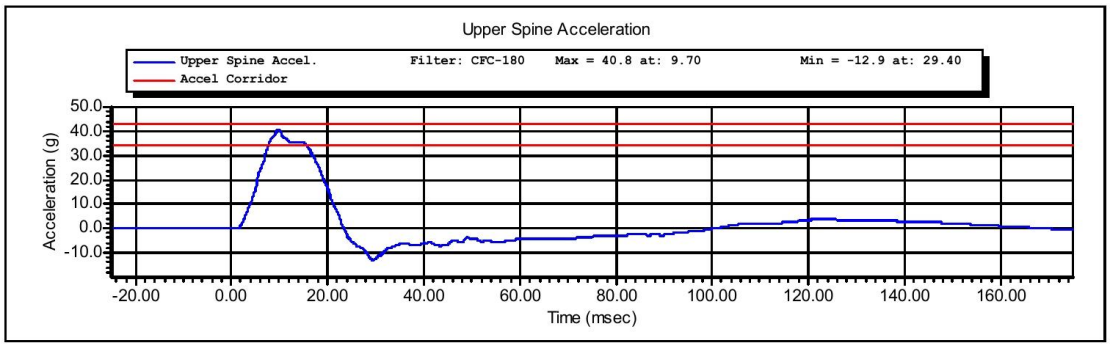

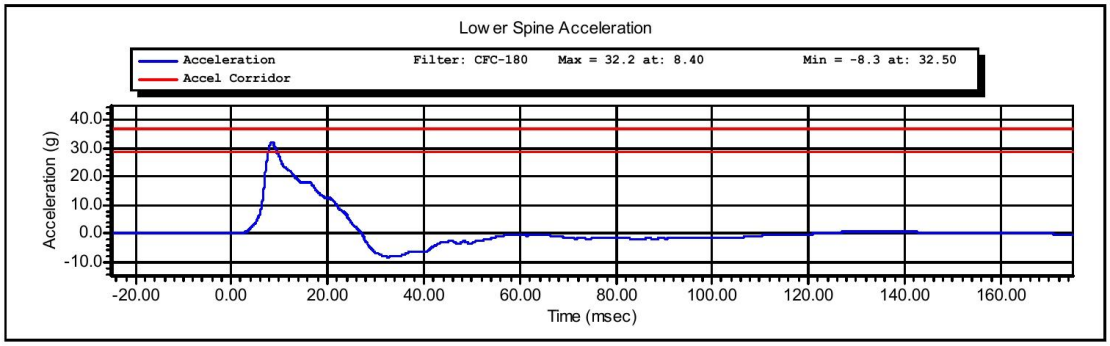

Test Time: **9:26:47 AM** Test Date: **10/3/2012**

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VERIFICATION REPORT

Test Name:	**Abdominal Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**8:38:59 AM**

Component Part Number	Component Serial Number

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.7**	deg C	P
Humidity	10	--	70	**56**	%RH	P
Velocity	4.20	--	4.40	**4.32**	m/s	P
Probe Acceleration	12.0	--	16.0	**14.2**	g	P
Upper Abdominal Rib Deflection	36.0	--	47.0	**43.9**	mm	P
Lower Abdominal Rib Deflection	33.0	--	44.0	**41.1**	mm	P
Lower Spine Acceleration - T12	9.0	--	14.0	**11.3**	g	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **8:38:59 AM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
FTSS	**180-3881-1**	**DS-1860**	**5/16/2012**
FTSS	**180-3881-1**	**DS-1861**	**5/16/2012**
Endevco	**7264-2000**	**P58796**	**5/17/2012**

Test Time: **8:38:59 AM** Test Date: **10/3/2012**

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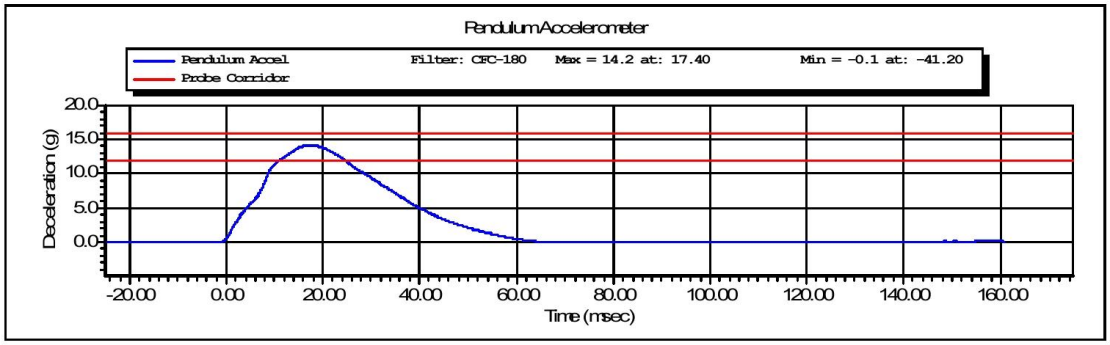
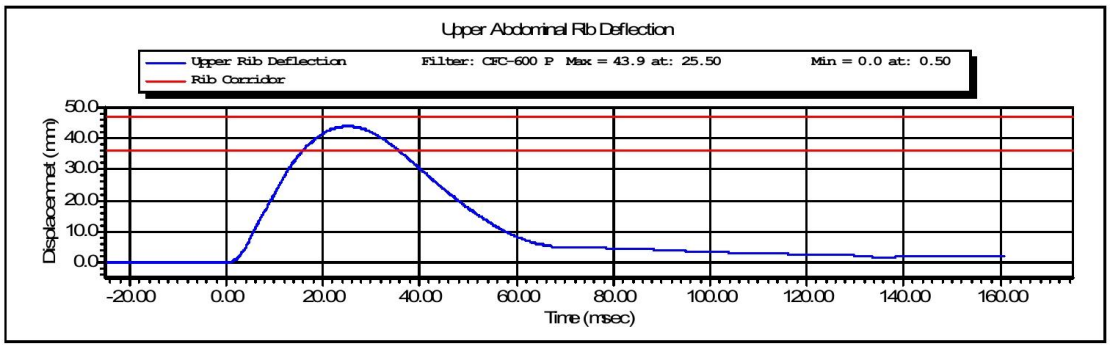
Test Name:	**Abdominal Impact**	Revision:	**8/24/2009**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**8:38:59 AM**





Test Time: **8:38:59 AM** Test Date: **10/3/2012**

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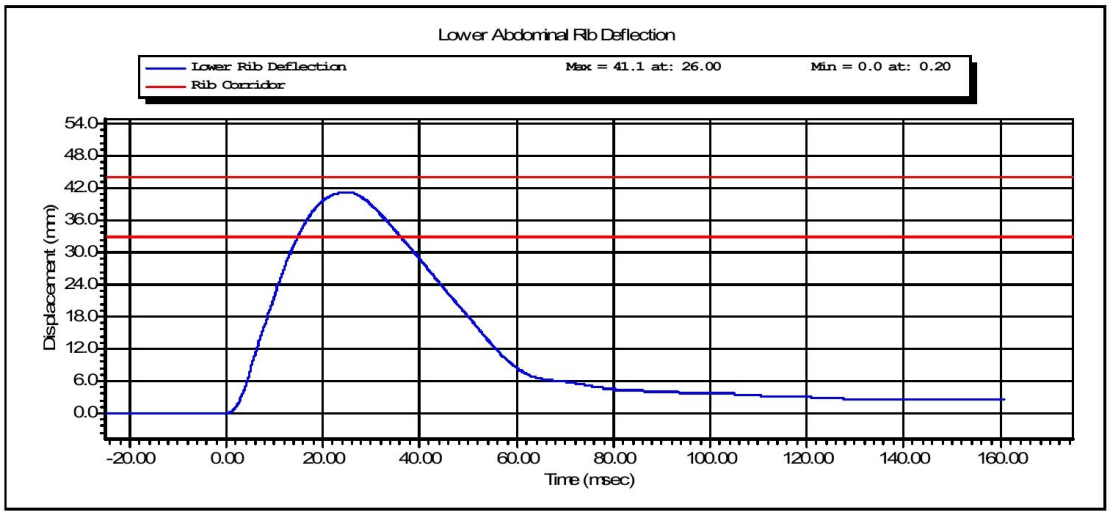

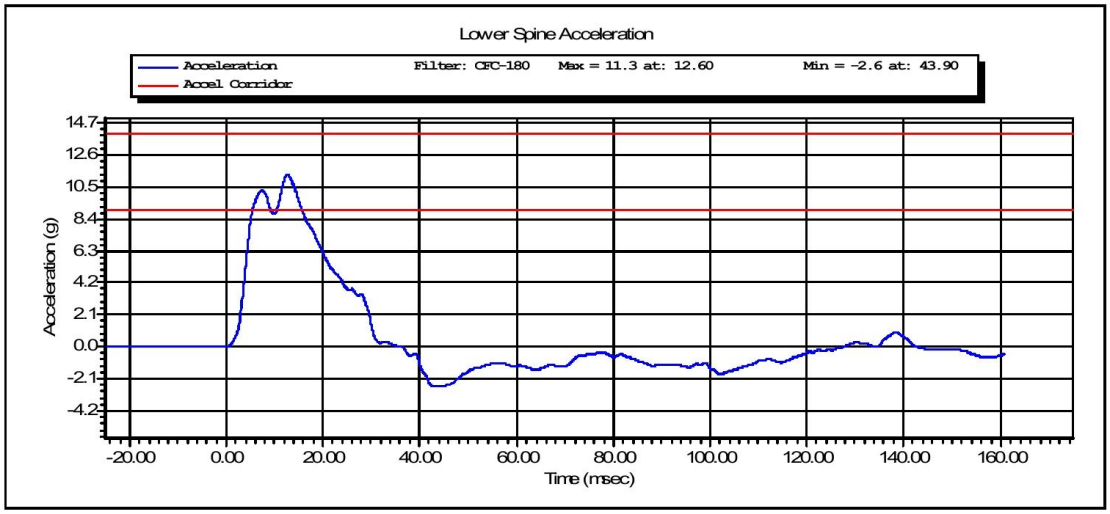

Test Time: **8:38:59 AM** Test Date: **10/3/2012**

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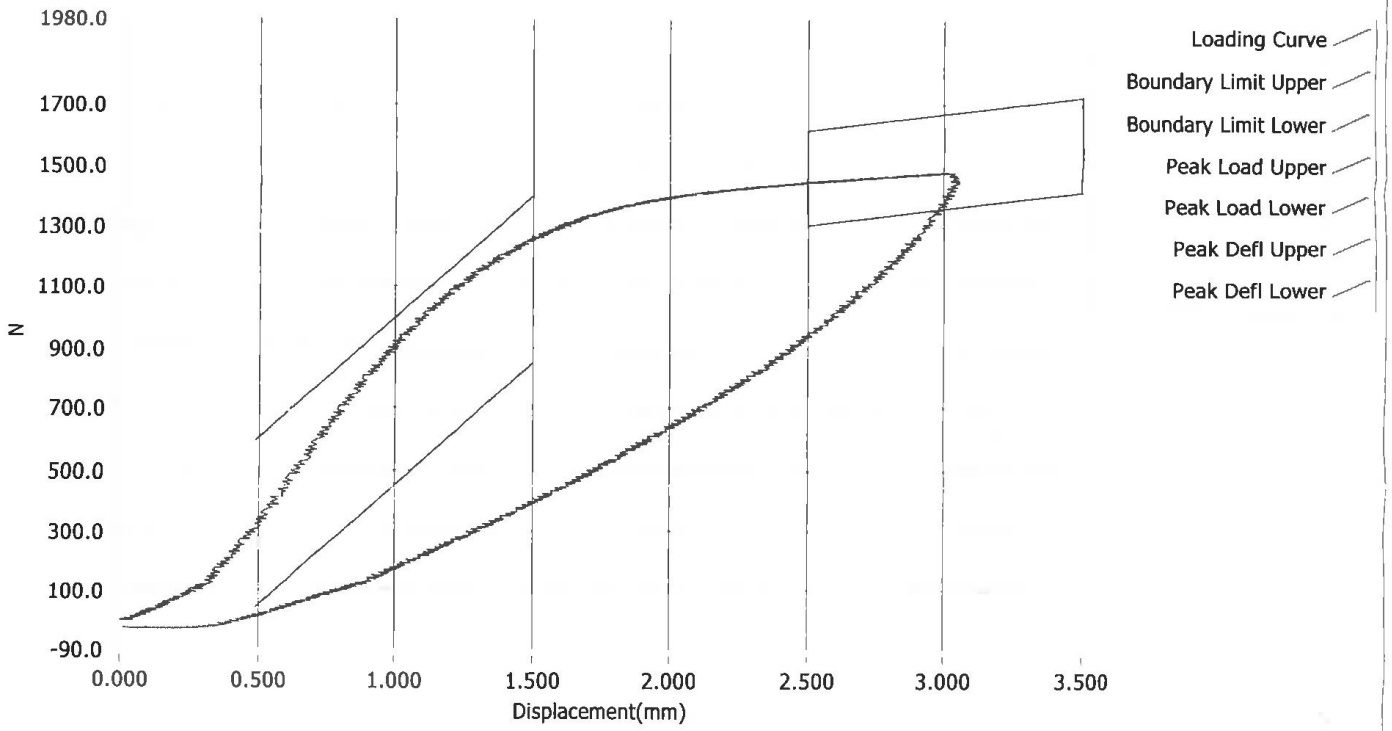
Resultant Data - SIDIIs Plug Compression



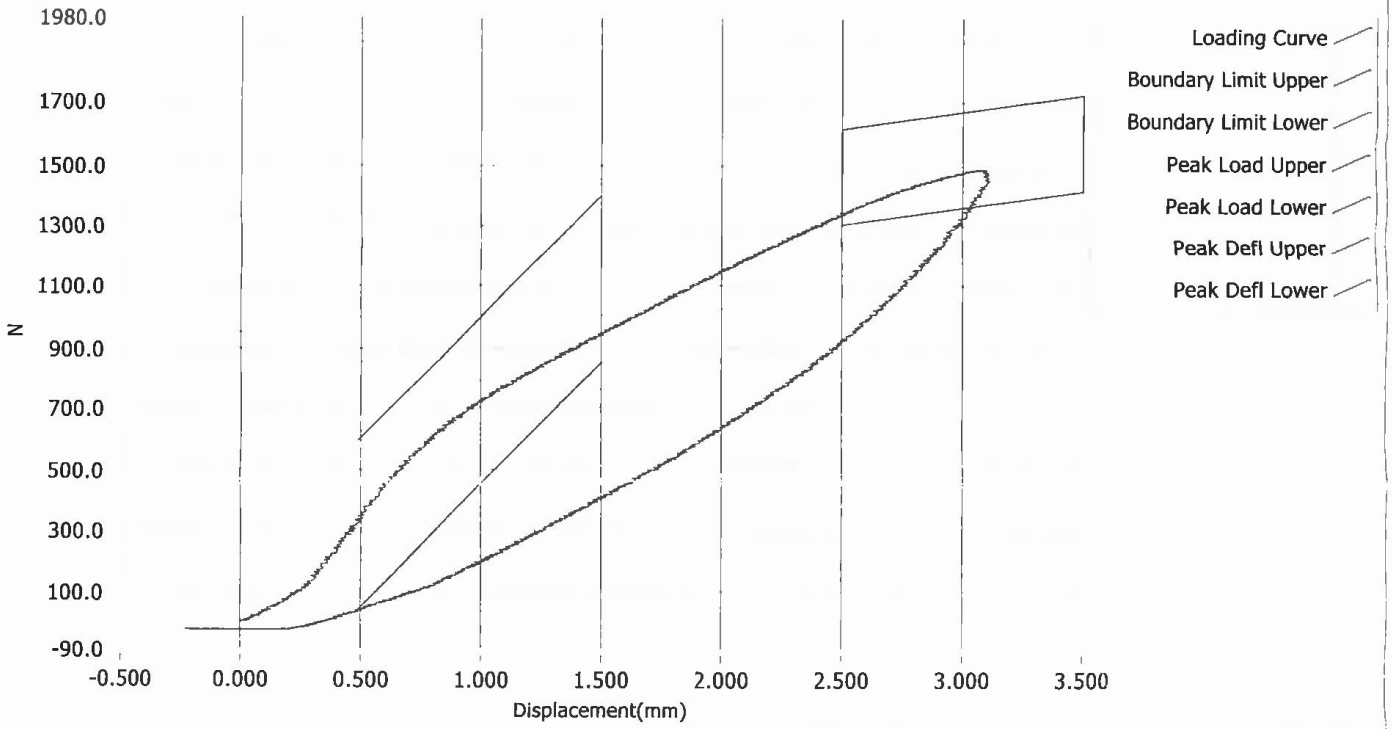
ATD Calibration Lab

Crash DG8012
10/9

Test ID	Part Serial Number	Test Date	Test Time
		9/27/2010	6:40 PM
Cert ID	ATD Serial Number	ATD Type	
	36644	SIDIIs	

Current Date : 9/27/2010 Current Time : 18:42:09

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

10/9 Cert.
DG8012

Test ID	Part Serial Number	Test Date	Test Time
	37078	10/8/2010	9:57 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 10/8/2010 Current Time : 21:58:27

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VERIFICATION REPORT

Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Acetabulum Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**9:47:23 AM**

Component Part Number	Component Serial Number
180-4343 Pelvis Flesh	**DJ0959**
FTSS Certification Plug - 1476N	**37078**
FTSS Test Plug 1478N	**36644**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.9**	deg C	P
Humidity	10	--	70	**55**	%RH	P
Velocity	6.60	--	6.80	**6.62**	m/s	P
Peak Probe Acceleration	38.0	--	47.0	**43.8**	g	P
Peak Pelvis Acceleration	34.0	--	42.0	**39.7**	g	P
Peak Acetabulum Force	3.60	--	4.30	**3.67**	kN	P

All test parameters are within specifications

Technician: **M. Goehle**

Supervisor: **D. Travale**

Test Time: **9:47:23 AM** Test Date: **10/3/2012**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2012**
Endevco	**7231CT**	**C14953**	**5/25/2012**
Endevco	**7264-2000**	**P63561**	**5/17/2012**
DentonATD	**3249J**	**LC-267Fy**	**5/21/2012**

Test Time: **9:47:23 AM** Test Date: **10/3/2012**

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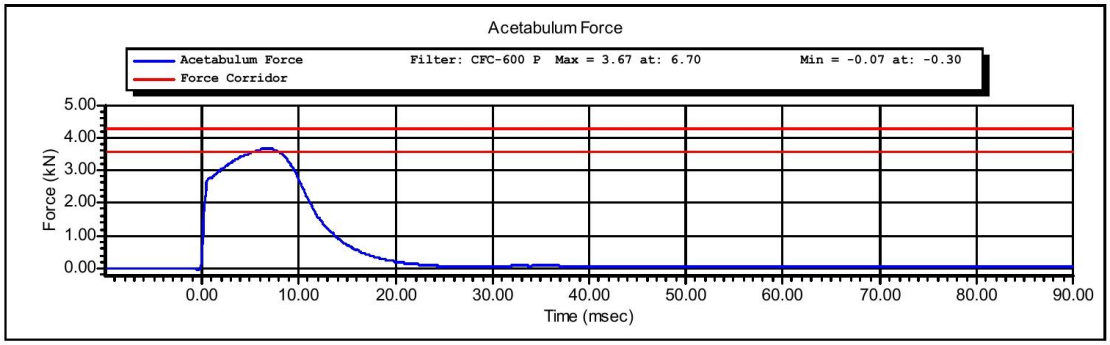
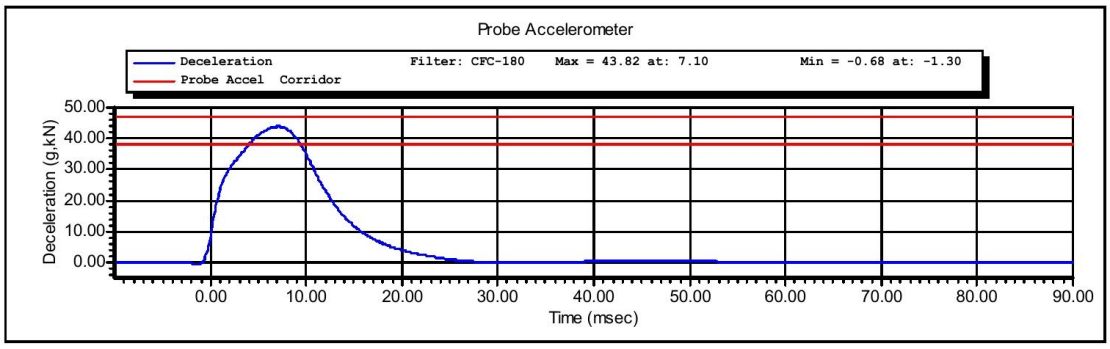
Test Name:	**Pelvis**	Revision:	**8/24/2009**
Sub Test Name:	**Acetabulum Impact**	Spec Type:	**NHTSA**
ATD Type:	**SID-IIs**		
ATD Serial Number:	**DG8012**		
Test ID:		Test Date:	**10/3/2012**
Test Number:	**1**	Test Time:	**9:47:23 AM**





Test Time: **9:47:23 AM** Test Date: **10/3/2012**

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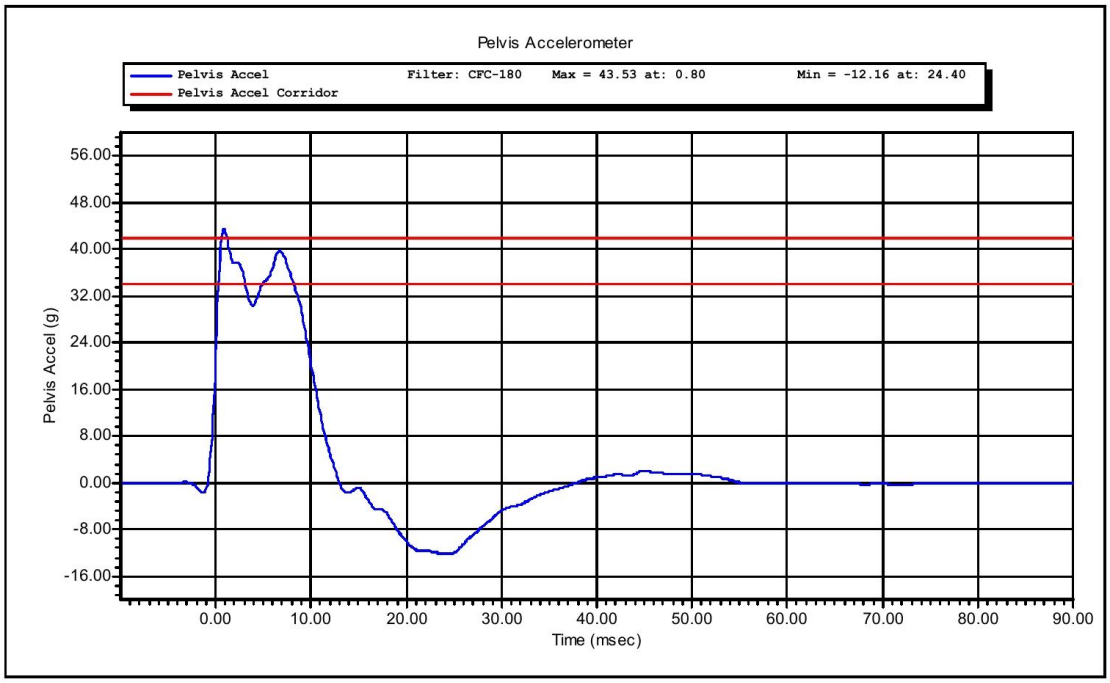

Test Time: **9:47:23 AM** Test Date: **10/3/2012**

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APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N: F034		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers		X	P58737	ENDEVCO	5/17/2012
		Y	P52022	ENDEVCO	5/17/2012
		Z	P52040	ENDEVCO	5/16/2012
Thorax Rib Displacement Potentiometers	Upper	Y	183	HONEYWELL	5/17/2012
	Middle	Y	184	HONEYWELL	5/17/2012
	Lower	Y	182	SERVO	5/17/2012
Abdomen Load Cells	Forward	Y	1512	DENTON	5/21/2012
	Middle	Y	1526	DENTON	5/21/2012
	Rear	Y	1516	DENTON	5/21/2012
Lower Spine Accelerometers (T12)		X	P51729	ENDEVCO	7/30/2012
		Y	P51873	ENDEVCO	5/17/2012
		Z	P52152	ENDEVCO	5/17/2012
Pubic Symphysis Load Cell		Y	465	DENTON	5/21/2012

Table 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N: 8012		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers			X	P49185	ENDEVCO	5/17/2012
			Y	P51949	ENDEVCO	5/17/2012
			Z	P51991	ENDEVCO	5/17/2012
Displacement Potentiometers	Shoulder		Y			
	Thoracic Rib	Upper	Y	1849	SERVO	5/16/2012
		Middle	Y	1514	SERVO	5/16/2012
		Lower	Y	1859	SERVO	5/16/2012
	Abdominal Rib	Upper	Y	1860	SERVO	5/16/2012
		Lower	Y	1861	SERVO	5/16/2012
Lower Spine Accelerometers (T12)			X	P52100	ENDEVCO	5/17/2012
			Y	P58796	ENDEVCO	5/17/2012
			Z	P50098	ENDEVCO	5/17/2012
Acetabulum Load Cell			Y	267FY	DENTON	5/21/2012
Iliac Wing Load Cell			Y	281FY	DENTON	5/21/2012
Pelvis Plug (struck side)				46474	HUMANETICS	9/22/11
Pelvis Plug (non-struck side)						

Table 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	A081429	MS	9/26/2012
	Vehicle Center of Gravity	Y	A081447	MS	8/10/2012
	Vehicle Center of Gravity	Z	A081463	MS	8/10/2012
2	Right Sill at Front Seat	X	A081413	MS	8/10/2012
	Right Sill at Front Seat	Y	A081417	MS	8/10/2012
	Right Sill at Front Seat	Z	A081443	MS	8/10/2012
3	Right Sill at Rear Seat	X	A081436	MS	8/10/2012
	Right Sill at Rear Seat	Y	A081453	MS	8/10/2012
	Right Sill at Rear Seat	Z	A081456	MS	8/10/2012
4	Left Sill at Front Door	Y	A081414	MS	9/5/2012
5	Left Sill at Rear Door	Y	A081418	MS	9/4/2012
6	Left A-Post Lower	Y	A081455	MS	9/4/2012
7	Left A-Post Middle	Y	A070861	MS	9/5/2012
8	Left B-Post Lower	Y	A005901	MS	9/5/2012
9	Left B-Post Middle	Y	A081431	MS	9/4/2012
10	Front Seat Track	Y	A005899	MS	9/4/2012
11	Rear Seat Track or Structure	Y	A081437	MS	9/4/2012
12	Right Rear Occ. Compartment	Y	A005903	MS	9/5/2012
13	Engine Block	X	A081461	MS	8/10/2012
	Engine Block	Y	A081425	MS	8/10/2012
14	Rear Floorpan Above Axle	X	A081445	MS	8/10/2012
	Rear Floorpan Above Axle	Y	A005869	MS	8/10/2012
	Rear Floorpan Above Axle	Z	A081433	MS	8/10/2012

TABLE 4 – MDB Instrumentation

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	C14901	ENDEVCO	9/14/2012
MDB Center of Gravity	Y	C16680	ENDEVCO	9/14/2012
MDB Center of Gravity	Z	CP30	ENDEVCO	9/14/2012
Left Frame at Rear Axle Centerline	X	C16507	ENDEVCO	9/14/2012
Left Frame at Rear Axle Centerline	Y	C16499	ENDEVCO	9/14/2012